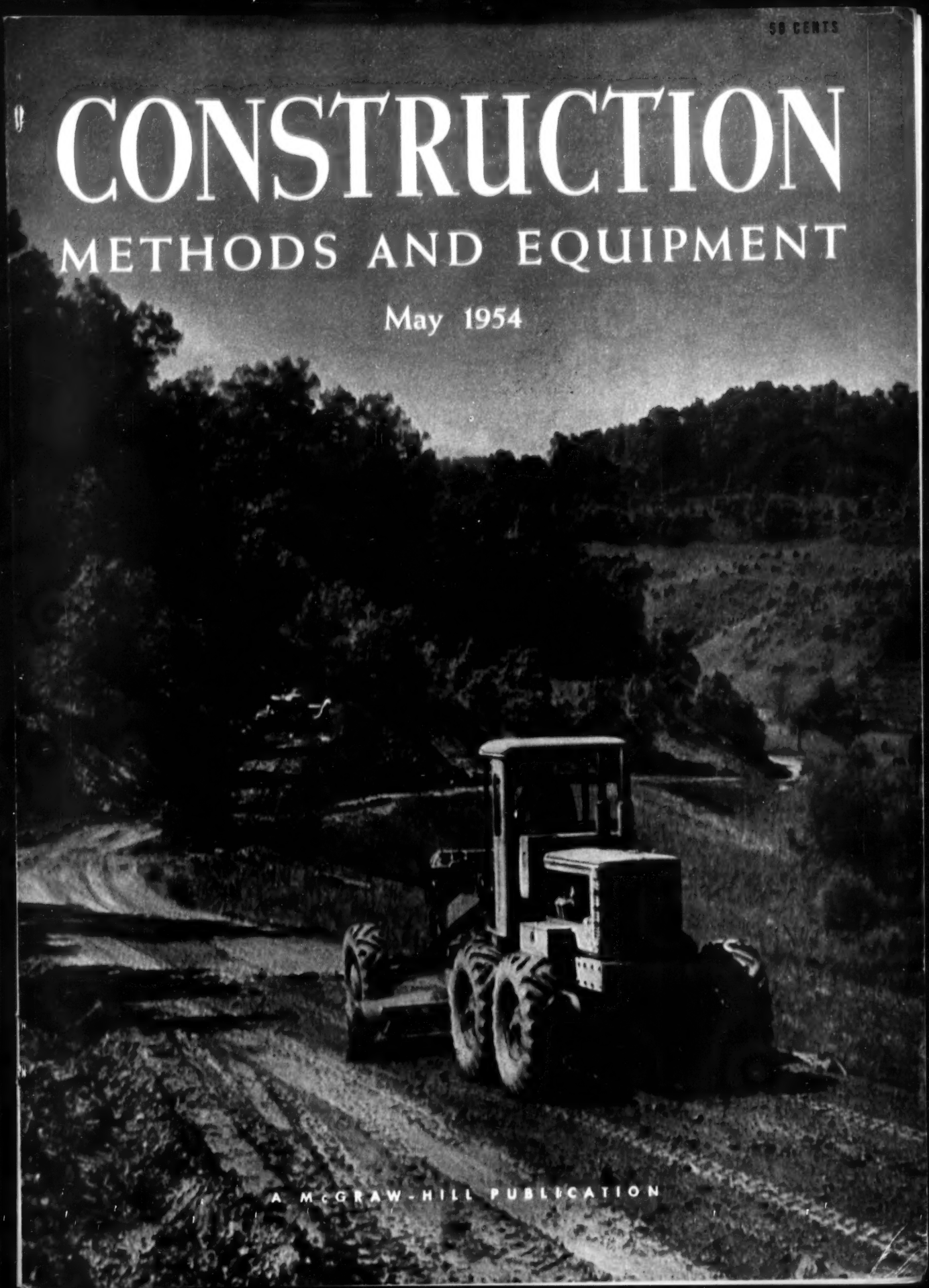
50 CENTS

CONSTRUCTION METHODS AND EQUIPMENT

May 1954



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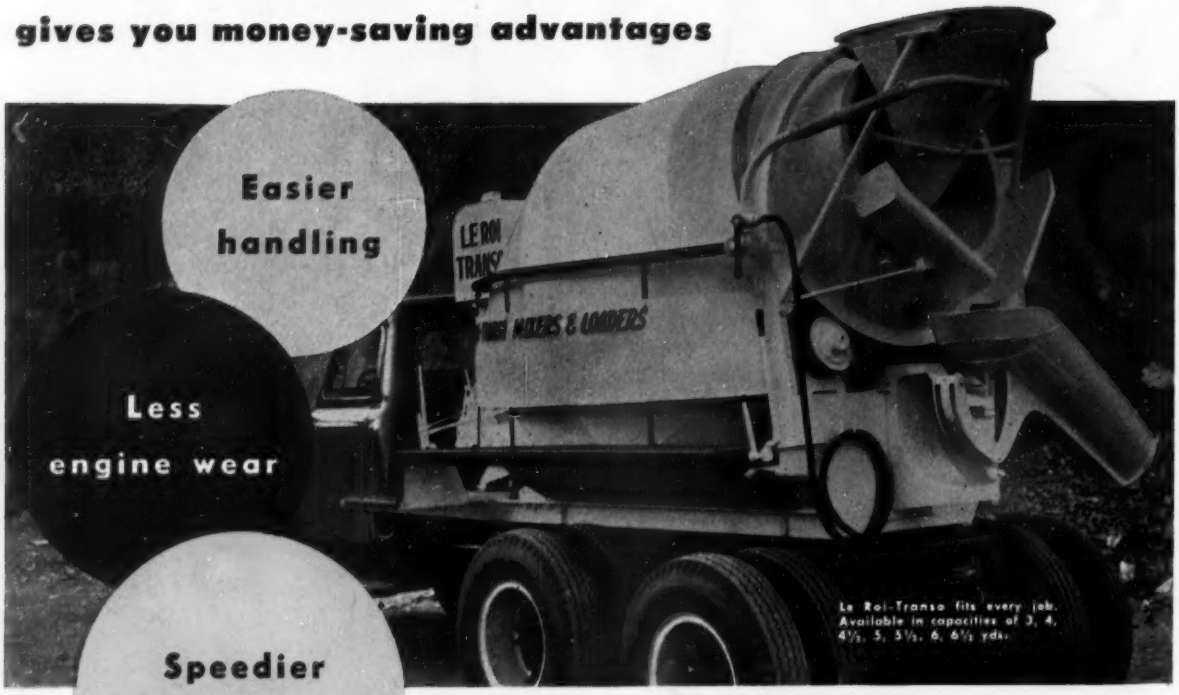
gives you money-saving advantages



Le Roi-Transo fits every job. Available in capacities of 3, 4, 4½, 5, 5½, 6, 6½ yds.

Good reasons why you should standardize on

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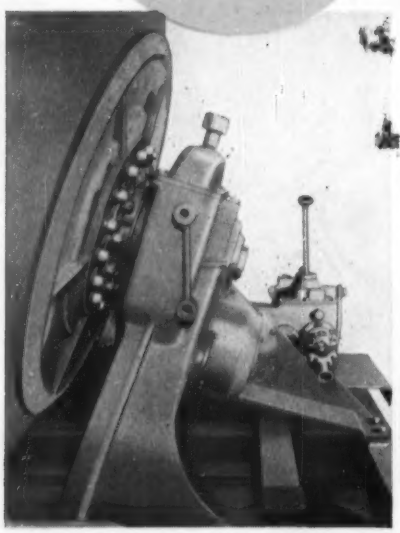

Patented Le Roi-Transo direct drive eliminates heavy chains, ring gears, sprockets, and bevel gears — and the maintenance troubles that go with them. Cuts dead-weight as much as 1,000 pounds.

TD-14

YOU get top-grade ready mix with real speed and economy, when you mount a money-saving, direct-drive Le Roi-Transo Mixer on your truck chassis.

A Le Roi-Transo Mixer has a patented, 2-speed, planetary, reversing-type transmission that lets you select fast or slow agitating, discharge, or mixing to suit the job. Your engine always runs at its most economical speed — no need for slowdown, even on long hauls. You save engine wear and tear, outages, maintenance.

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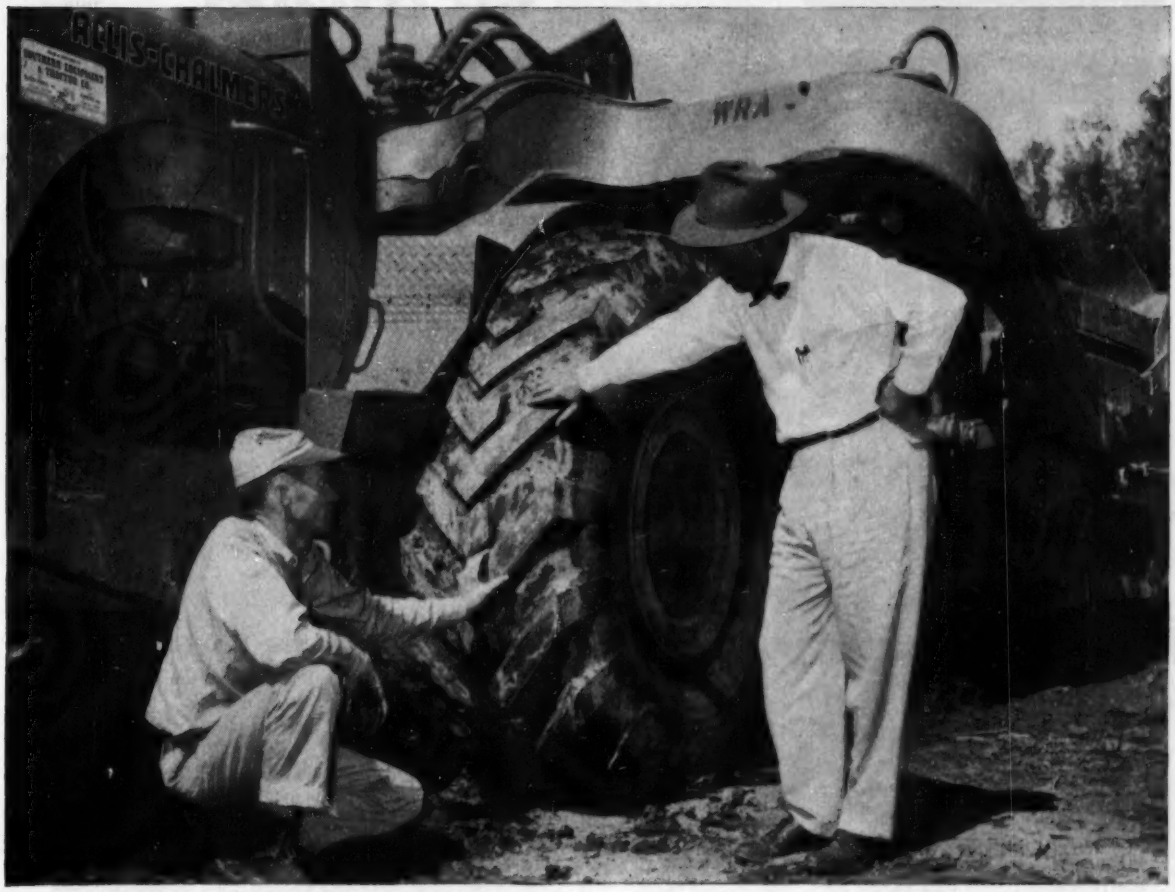

Super Traction tires pull through mud to help build a highway

THIS tractor scraper is at work on U.S. Highway 190 near Livonia, La. It is one of the units of W. R. Aldrich & Co., a Baton Rouge firm specializing in heavy construction projects. Plowing through the area's heavy, muddy soil under 20-ton loads could easily cause the scraper to bog down, tie up production, waste valuable time.

But the company avoids this trouble, uses B. F. Goodrich Super Traction tires —tires built to pull through such rough going faster, easier.

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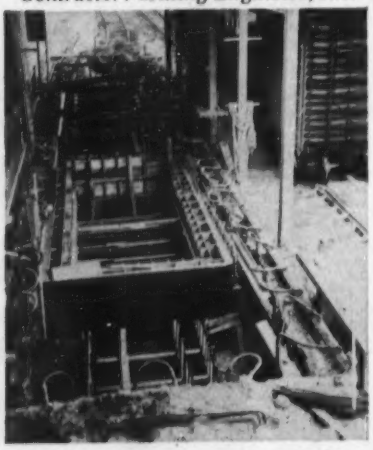

WELLPOINTS RACE TO RESCUE WHEN BOTTOM BOILS

AT 4 FT. above subgrade, the bottom of this excavation began to heave and boil dangerously. A hurry-call went out; by morning Griffin engineers had raced 250 miles to what was clearly a "toughnut" situation—digging at a standstill—hole sheeted on 3 sides—sandwiched between building and siding, with low-ceiling track-shed overhead.

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Volume 36
Number 5

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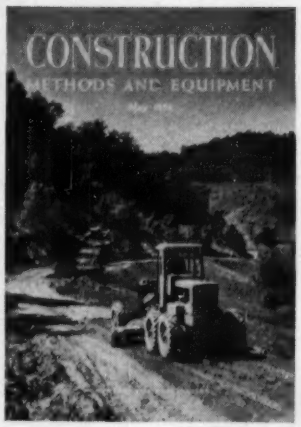

On the Cover...

Earthmoving is the big job when farm-to-market roads undergo improvements to serve America's cars and trucks better. And this Adams 100-hp grader is right at home moving dirt on a 4.2-mi road improvement job near Booneville, Ky., working for Marlow Construction Co. of Lexington. The big Adams and a bulldozer in the background are widening, relocating and grading.

COMING IN JULY: Valuable maintenance information filling one entire issue of CONSTRUCTION METHODS AND EQUIPMENT devoted entirely to helping the contractor keep his equipment productive at lowest cost for longer periods. Extra specials will be an up-to-date inventory of maintenance manuals and a report on the care of contractors' trucks.

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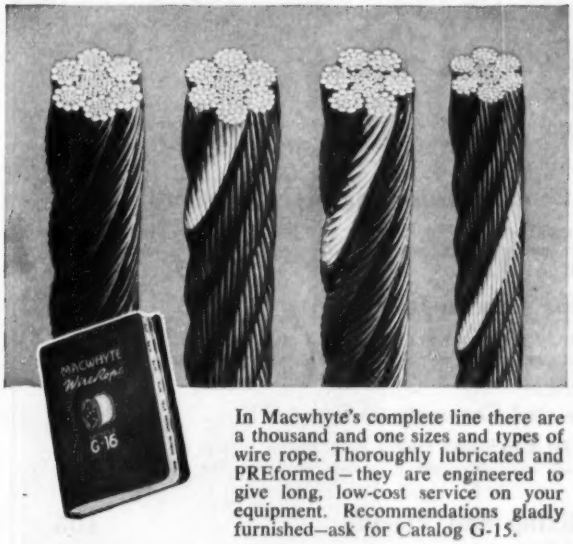

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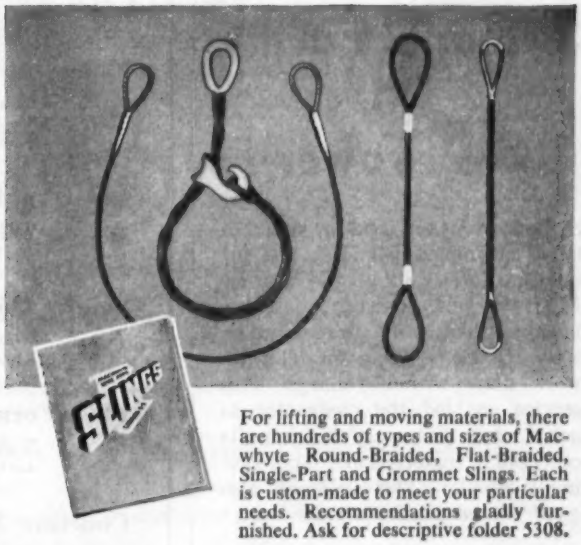

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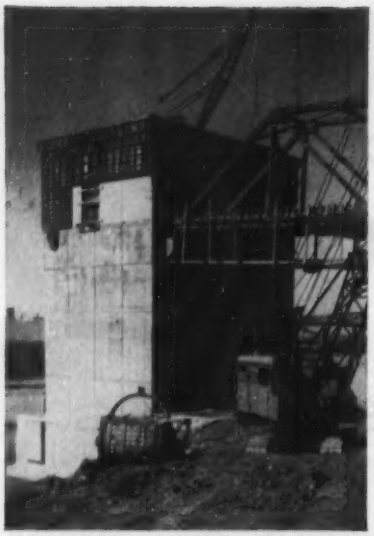

Intake Tower, Kaw Power Station, Kansas City, Kansas, R. G. Aldridge, Gen. Con.

Symons Forms On 64′ Tower

Symons forms are used for architectural concrete on exterior and for intricate form work on the interior. Many corbels, inserts, buttresses, ladders and other details required on this job. Engineering for all form work done without charge. This service enabled the contractor to get a clear picture of his job (its cost, bill of materials and labor saving methods). Our fieldman also gave regular on-the-job service.

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Pay Dirt in This Issue

MAY, 1954

Dual-Purpose Piles Cut Building Costs 54

Uncased concrete piles are poured in drilled holes at close intervals to act as soldiers and hold the sides of the excavation. Later they become part of the permanent basement wall, whose poured section can thus be thinner.

You Can Use a Small Cableway 62

The smaller tautline can be built easily by a contractor to handle various materials in varying capacities. It can replace an assortment of materials handling equipment in rough terrain; can be engine- or electric-powered.

Masonry Materials Handling Gets a New Twist . . . 90

Here's the complete story on the West System of palletizing masonry material. Costs little to put it in operation and it can save as much as 15% in masonry costs.

Make One Job of Two Pipeline Crossings 129

Parallel 8- and 12-in. lines 5,800 ft long are tied together for simultaneous launching and for pulling through trench beneath Delaware River. Pontoons ease the big pull.

Good Yard Bends Reinforcing Steel Efficiently . . 58

Well-organized operation has nine men hooking and bending two tons of ⅝-in. steel per hr in compact location.

Sonora Opens Area to Irrigation 66

Western Mexico is scene of excavation, tunnels, canal lining and construction of many miles of drains and laterals.

Place Forms and Concrete at Same Time 86

Walls for a 26-ft high tank were poured in lifts as forms were set panel-by-panel to avoid high concrete drop.

Concrete Mixing and Placing 105

For permanent plants, proper storage of aggregates, good cement handling and ample power and water are important.

Prestressed Bridge Beams Cast-in-Place 148

Heavy handling equipment was not needed to place members when contractor cast highway bridge on site trestle.

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NEXT MONTH The newest methods of blasting with the right type of explosives can achieve time- and money-saving results under many conditions. Read how, in June.

114-PIECE EARTH-MOVING FLEET KEEPS PALISADE DAM RISING 28,000 CUBIC YARDS A DAY!

The 13,800,000-cubic-yard Palisade Dam on Snake River, Idaho, will be one of the world's largest earth-fill barriers—260 feet high, 2,200 feet long by 40 feet wide at the crest, and 2,250 feet wide at the base. Wrenching the treacherous Snake River from its bed to a man-made channel (with 60 miles of momentum behind the river) was just one of the problems this job dishes out regularly!

GIANT HARD ROCK LUGS, as all types of tires used on this job, get expert, periodic inspections that save rubber and down time.

Wherever there's a job-for-the-book, GOODYEAR IS THERE. Yes — *all* there — with the right type tire for each job, with the *toughest* tires ever, because now they're built with new, Triple-Tempered (3-T) Cord!

3-T Cord—both Nylon and Rayon—is made by Goodyear's exclusive Triple-Tempering process. It *stays* at its most bruise-resistant, heat-resistant point, controls tire growth, cuts tread and body failures to new lows. Get *all* the facts before you buy or specify any other tire. Goodyear, Truck Tire Dept., Akron 16, Ohio.

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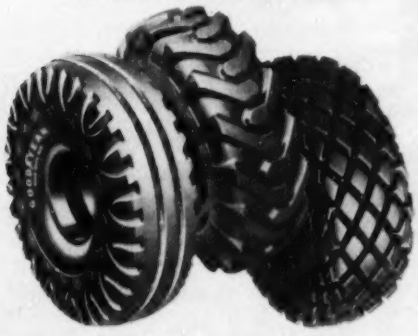
for greatest all-round stamina



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★ JOB TALK ★

...About Methods

Stringing Wire Through Pipe

PERCY ENEFER, an employee of the British Columbia Electric Co., was awarded $100 for his method developed to speed underground cable work.

When stringing cable through long pipe sections, he attaches a small canvas bag to a long wire and inserts the bag into the conduit. Enefer then introduces compressed air into the pipe behind the bag and blows it through, pulling the wire as it goes along. Flexibility of the bag permits it to pass obstructions.

Wire Rope Holds Tractor Cab Roof

Pacific Northwest construction and logging companies are turning to large-diameter wire rope for simple flexible supports to hold steel cab roofs over operators of tractors and other heavy equipment.

Shown here is one of eight Caterpillar crawlers owned and so equipped by the Biles Coleman Lumber Co., Oma, Wash. Suitable lengths of pipe are attached vertically to make the four corners of the "cab" surrounding the operator. Then two appropriate lengths of 2¼-in. or 2⅜-in. wire rope (this was supplied specially by Bethlehem Steel) are cut and the ends tucked down the open pipe supports—leaving a neat arch fore and aft to which is clamped a formed plate to create the roof.

Anti-sway braces can be added, as here, and the canopy raised or lowered inside the pipes, as desired. Flexibility of the wire rope increases operator protection under some conditions and reduces breakage of roof members.

Install Cardboard Water Drain Wicks

Cardboard strips pushed deep into the ground in a wet area near Essen, Germany, are reported to be doing the same job that vertical sand drains are doing in this country.

When a high-water dyke was begun on a thick layer of mud, a plan was sought to remove the water squeezed from the mud when the weight of the fill settled on it. First, a 4-ft layer of gravel was dumped over the site to provide a passable base for the Kjellman-Franki

(Continued on page 16)

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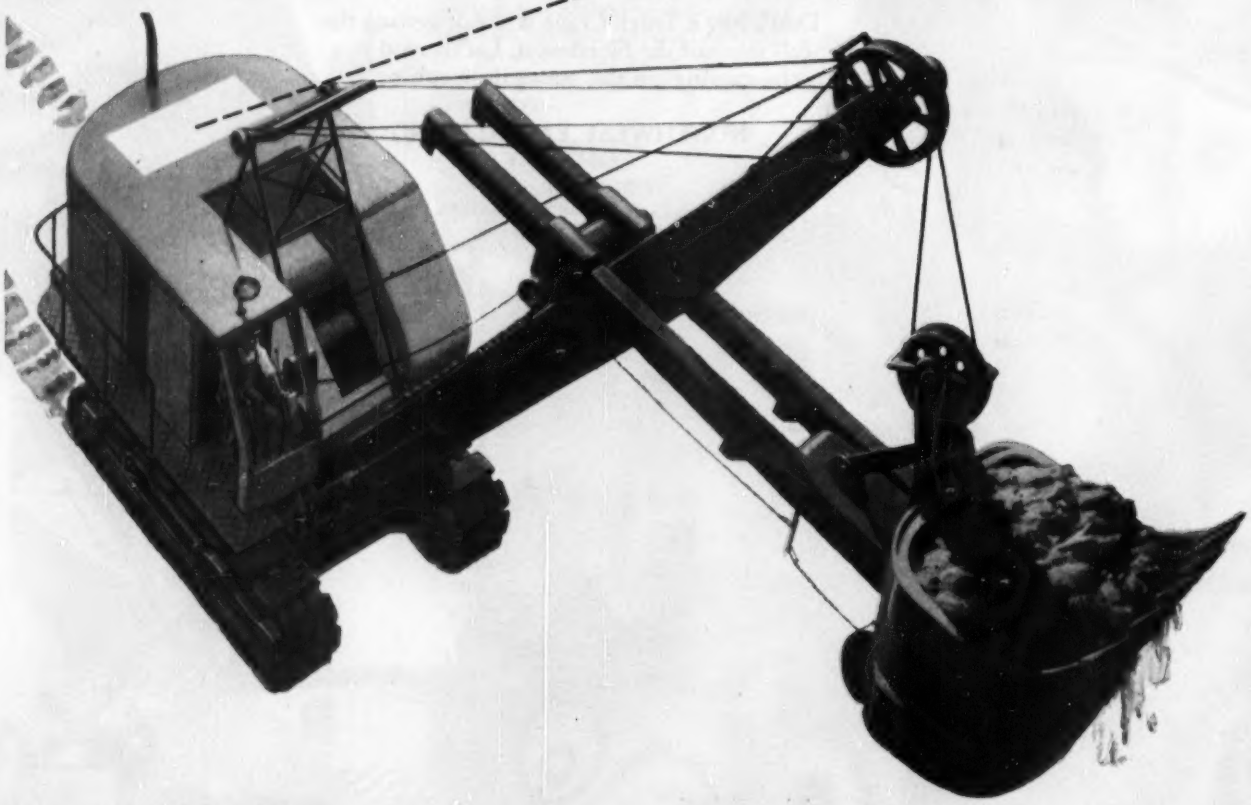
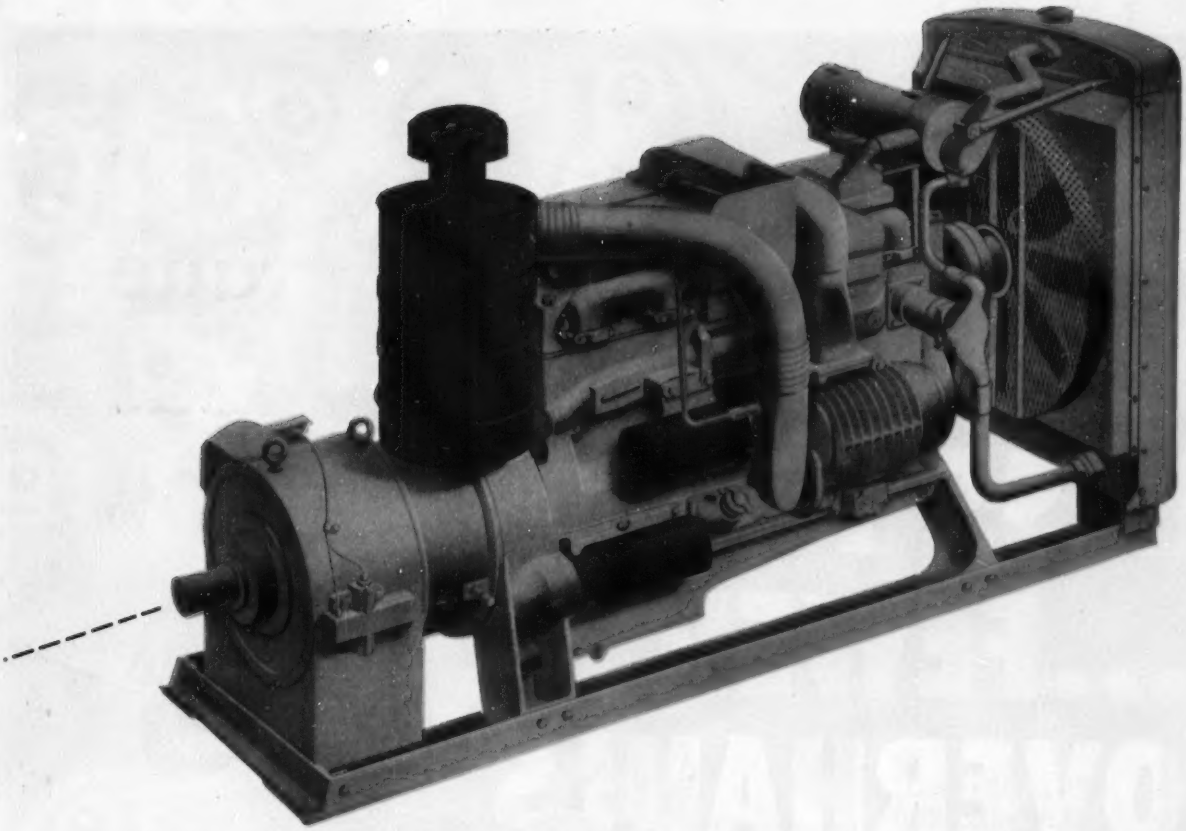
Gives full utilization of horsepower, minimizes shock





loads, adds to life of shovels, cranes, and draglines

Cummins Torque Converter Packages give smooth steady power over the entire digging or working cycle. Even where digging is the toughest and power requirements fluctuate widely, the Cummins Torque Converter maintains power without lugging, stalling or overspeeding. Crane work, too, can be speeded because loads can be handled more smoothly and accurately.

The output of the Cummins Torque Converter Package is measured by an output shaft governor which determines the exact amount of power required each instant and automatically matches engine speed to load requirements. This increases work capacity, adds to equipment life, saves fuel and engine wear.

Cummins Diesels, ranging from 60 to 600 h.p., equipped with one of many types of torque converters, can match any job you have. Available as replacement units or in many makes of new equipment.

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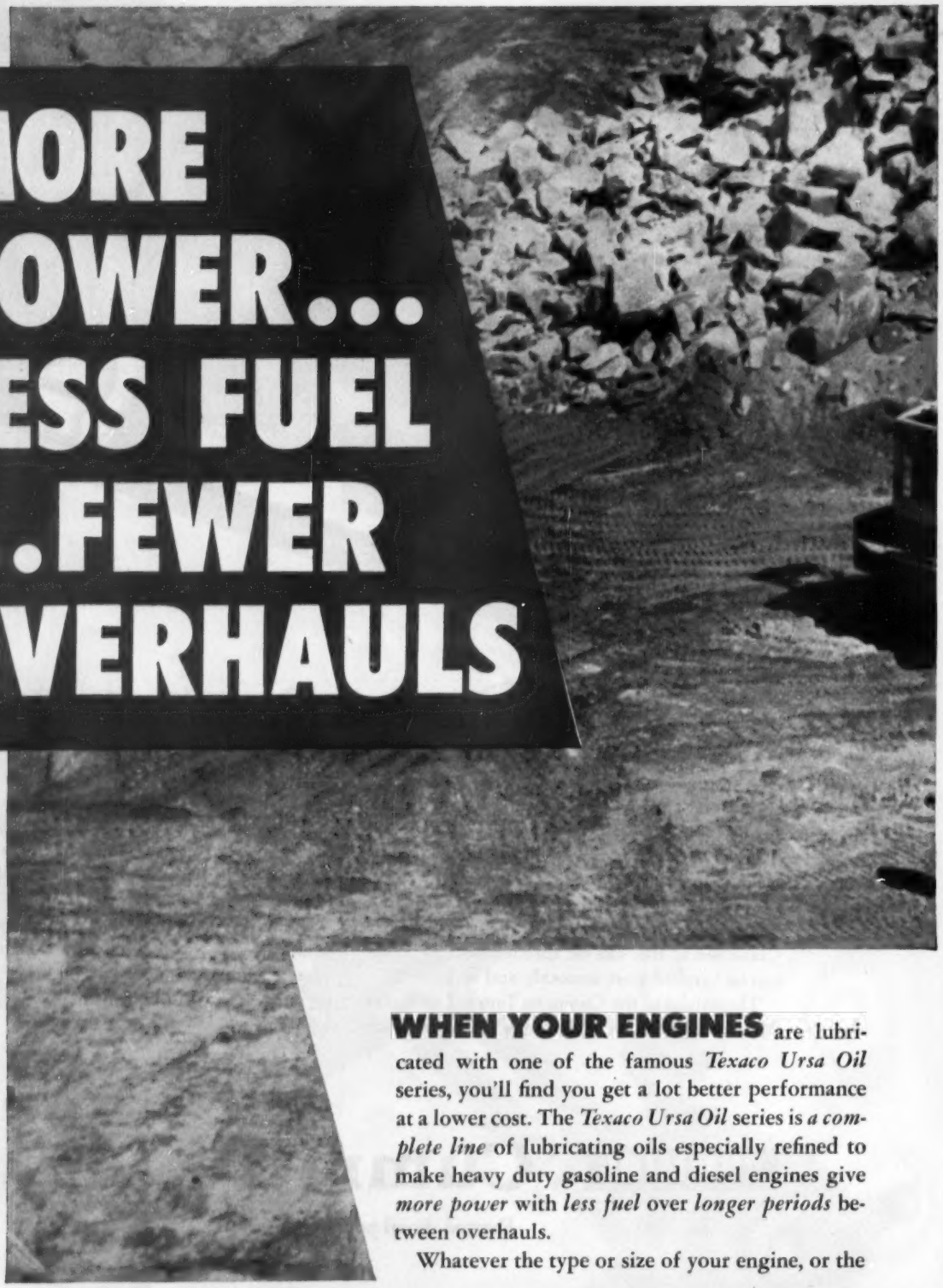

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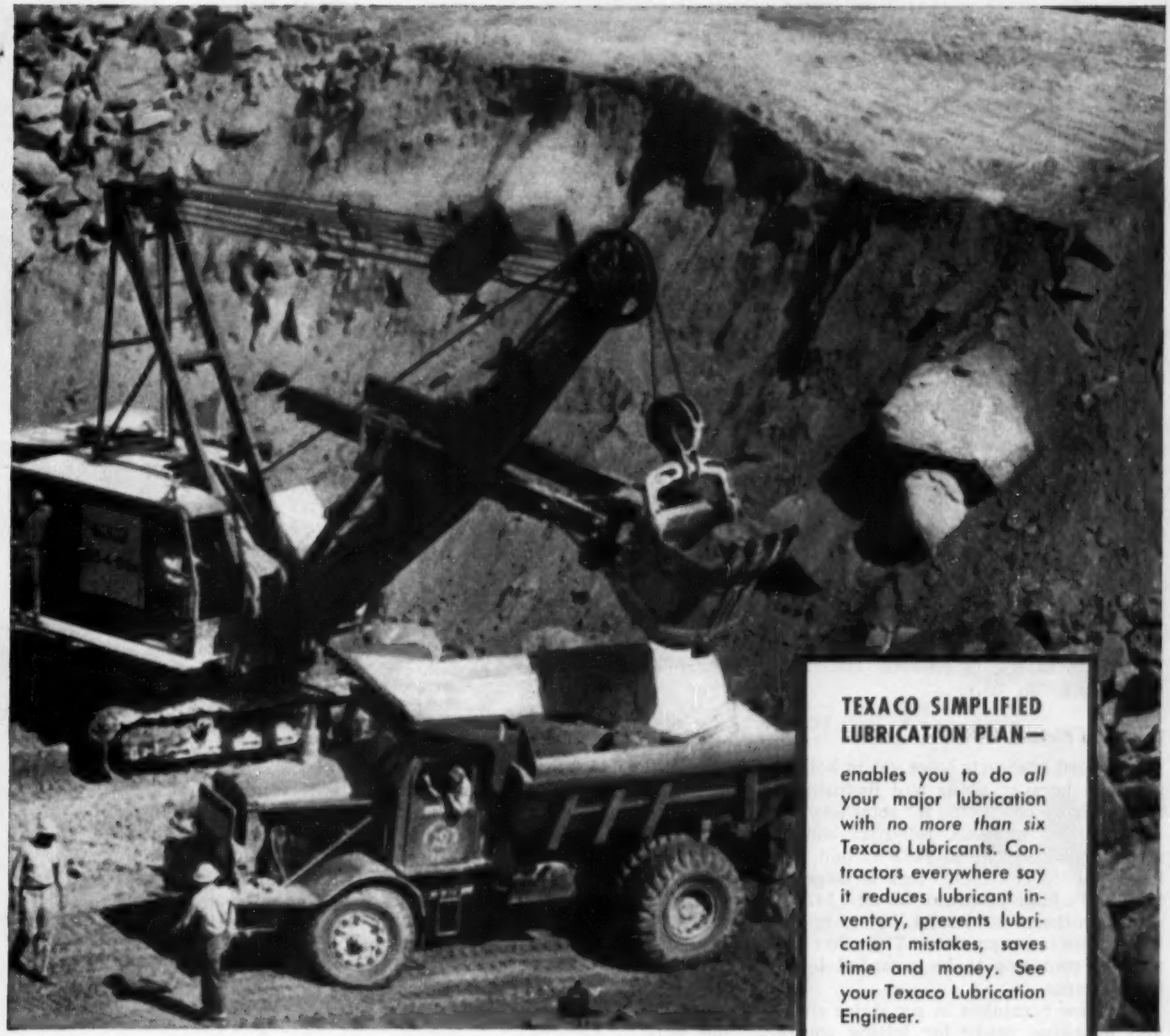

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1954: Biggest Yet for Highways

A RECORD-SMASHING free highway construction program plus a heavy schedule of toll roads will make this the best year ever for highway contractors. Late 1954 should see lettings start on a whole new crop of toll roads which will not get into full swing until '55 and '56. On top of this the new federal-aid-to-highway authorization provides an all-time high in federal funds for highway construction in the two fiscal years starting next July 1. This means that contractors can now plan with assurance on plenty of new business through 1956.

State Highway Departments are budgeting $1.9 billion in '54 contracts for free highway construction, topping '53 contracts by 18%. Maintenance expenditures will also be higher than in '53. The biggest part of this will be $514 million budgeted for force account maintenance, 4% more than last year. A much smaller amount of maintenance work, although it's still big business, will be the $51 million to be let by contract. This incidentally, is 8% less contract maintenance than was let in '53.

Toll Road Picture for '54 Unsettled

Toll road contracts have yet to boil down to a firm program because plans and financing arrangements are still to be completed for some key projects.

As of this moment, toll-road contracts budgeted for this year add up to $453 million, a 44% drop below total '53 contracts. This is largely a mop-up of last year's huge program. Of this, $423 million represents contracts to be let by turnpike or thruway authorities in seven states. The other $30 million consists of contracts to be awarded by state highway departments.

But new turnpikes in six states should have plans and financing ready for letting contracts that will boost these millions by an amount that cannot be budgeted accurately this early. Once these preliminaries are completed, contracts are expected to follow fast, and this new work should start to come along by the fourth quarter.

Here's how toll road contracts, as budgeted by the turnpike and thruway authorities line up for '54:

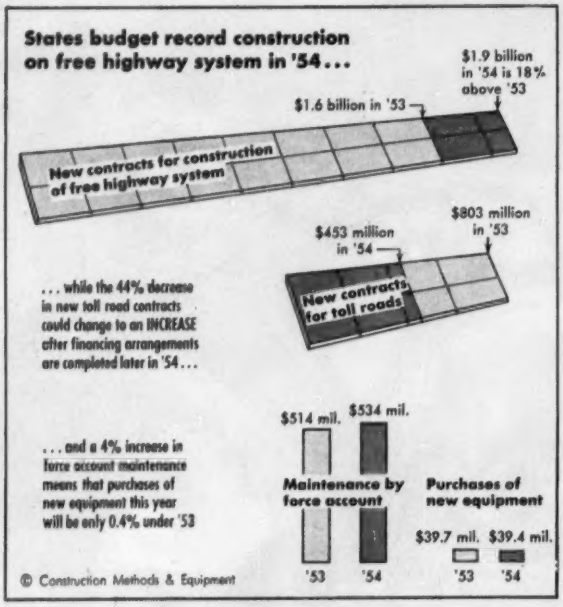
	1953	1954 (Thousands)	Total Program
Maine Turnpike Authority	$1,686	$25,000	
New York Thruway Authority	253,000	75,000a	$140,000
New Jersey Turnpike Authority	21,078	95,000	395,000
Highway Authority	140,000	35,000	
Pennsylvania Turnpike Comm.	48,500	150,000	250,000d
West Virginia Turnpike Comm.	72,204	7,914	132,000
Ohio Turnpike Comm. Proj. 1	211,894	25,000	710,000b
Oklahoma Turnpike Authority	300	10,000	150,000c
Total	$748,662	$422,914	$1,777,000

(a)Tentative—neither plans nor financing are far enough along to make a firm budget.

(b)Project 2 and spurs; feasibility studies just beginning.

(c)To offer bonds during 1954.

(d)Northeastern extension only; planning four other extensions totaling $540 million.


States budget record construction on free highway system in '54...
$1.9 billion in '54 is 18% above '53
$1.6 billion in '53
New contracts for construction of free highway system
$803 million in '53
$453 million in '54
New contracts for toll roads
... while the 44% decrease in new toll road contracts could change to an INCREASE after financing arrangements are completed later in '54...
$514 mil.
$534 mil.
... and a 4% increase in force account maintenance means that purchases of new equipment this year will be only 0.4% under '53
Maintenance by force account
Purchases of new equipment
$39.7 mil.
$39.4 mil.
'53
'54
'53
'54
© Construction Methods & Equipment

While toll roads are just now coming into their own, maintenance is already running into millions of dollars per year. In '54 five states have budgeted $5 million for maintaining their toll facilities, 14% more than was budgeted last year. Nearly all of this is done by force account. Most of the '54 maintenance on toll roads is budgeted in Pennsylvania, $3 million, and in New Jersey, $1.3 million.

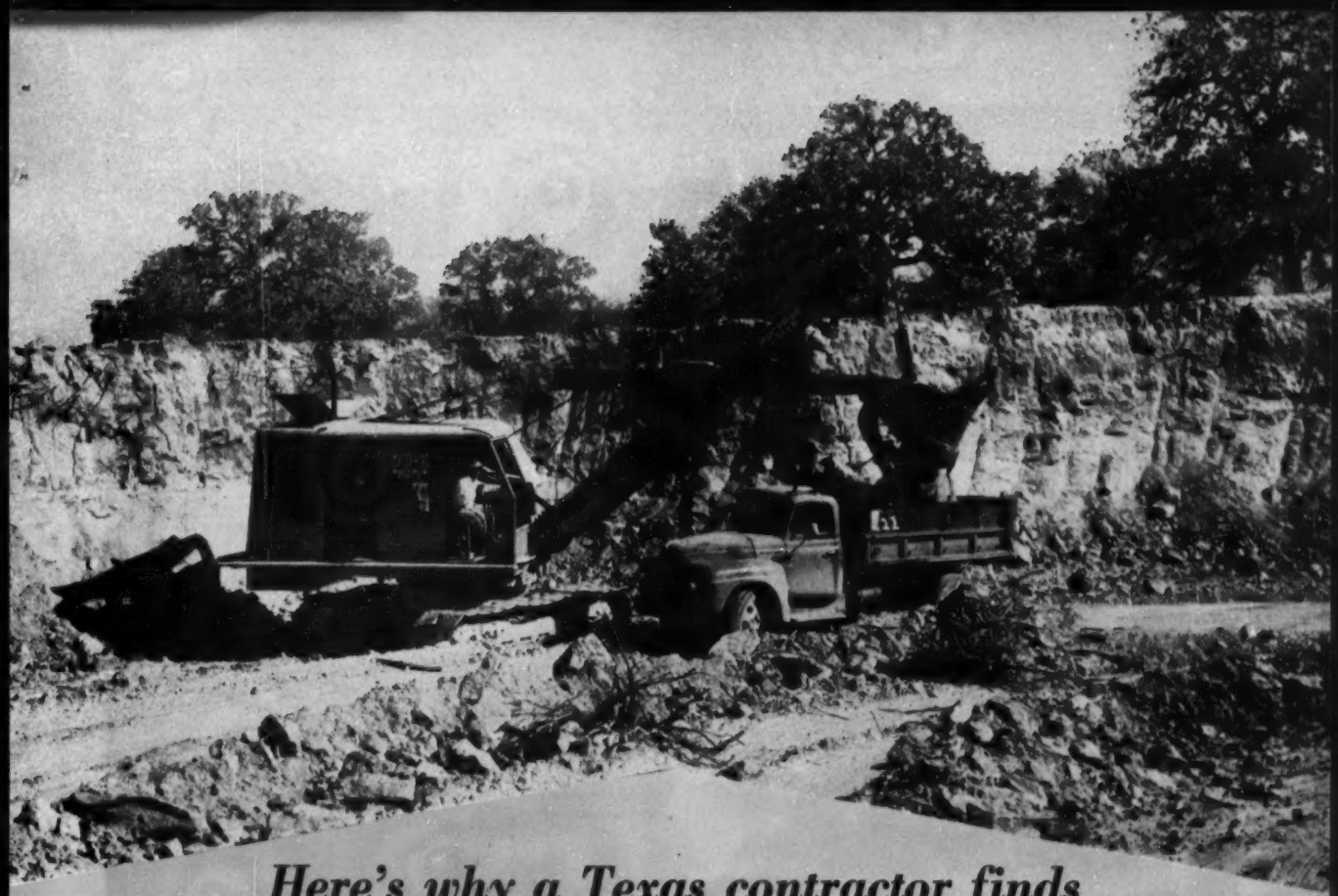
Federal-Aid-to-Highway Funds up 68%

The new federal-aid bill for highways authorizes $966 million in federal funds in each of the next two fiscal years beginning July 1. This is 68% more than the $575 million available in the fiscal year ended June 30, 1953, and will go a long way in maintaining the high level of highway construction into 1956.

The final effect of this big increase in federal aid depends upon the ability of the states to raise matching funds. This will not be a serious problem, however, according to the reports from 43 state highway departments. Of these, 76% report that they have present revenues sufficient to make full use of the added federal-aid funds. Of these 32 states, nine said that this would mean more limited funds for 100% state-financed highways or betterments.

The eleven states reporting that they would need additional revenues to make full use of increased federal aid are: Massachusetts, New York, New Jersey, Delaware, West Virginia, Mississippi, Louisiana, Indiana, North Dakota, Montana, and Nevada. Among the three states which would need higher gasoline taxes, New York would also need a bond issue and North Dakota would require higher license fees and property taxes.

(Continued on page 24)



Here's why a Texas contractor finds

IT PAYS TO BE ALL-CAT*

E. E. Hood and Sons of San Antonio, Texas, are 100% Caterpillar-equipped. Ranney V. Hood, co-owner of the firm, tells why:

"We feel that Caterpillar equipment is the best made.

"We can move half again as much material in the same amount of time.

"If we have to work on our Cat machines, parts are easy to get and repairs are easy to make."

The Cat-powered Bucyrus-Erie 1½-yard shovel shown here makes a swing in less than 15 seconds, loads a five-yard truck in 54 seconds. That's fast, cost-cutting production! The firm is reconstructing farm-to-market highway No. 346, south of San Antonio.

In addition to the Caterpillar D13000 in the shovel, Hood and Sons own two D13000s in a crusher, four Cat No. 12 Motor Graders, seven Caterpillar track-type Tractors, and two Cat rubber-tired Tractors with Scrapers.

Mr. Hood especially likes the dependability and low operating costs of Caterpillar products. The D13000 in the shovel has cut production costs through nearly 8000 hours of pamper-free operation. And, like all Caterpillar Diesels, it can deliver full power, and idle without fouling, on low-cost No. 2 furnace oil.

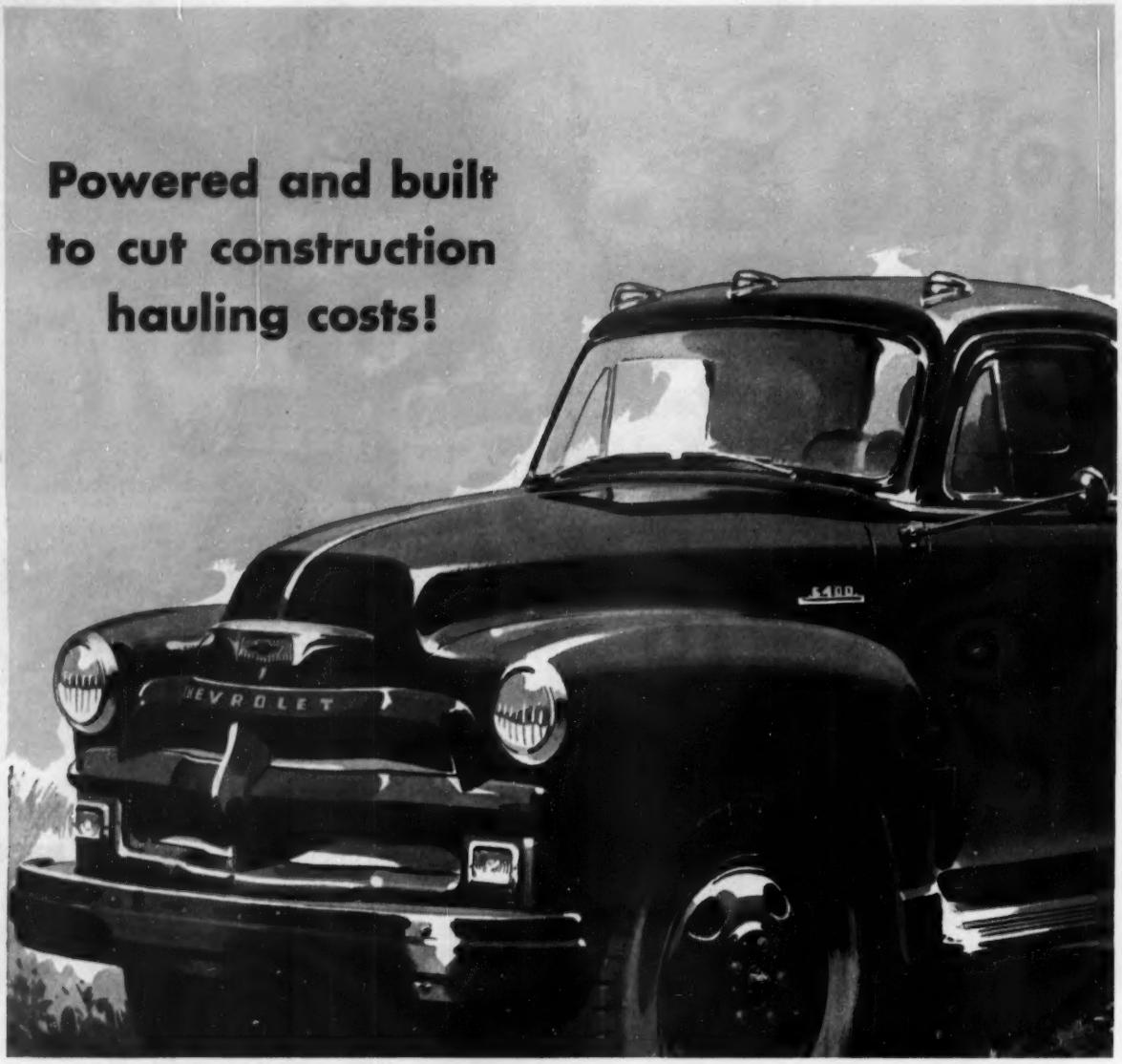
Experienced contractors like Mr. Hood find valuable "pluses" in standardizing on Caterpillar products: increased operator familiarity, ease of maintenance, simplified parts inventory. There are 12 Caterpillar Engines and Electric Sets, to 500 HP and 315 KW. Your Caterpillar Dealer—who furnishes fast, skilled service and genuine factory parts—will help you pick the unit that's just right for *your* needs. When you repower, or order new equipment, be sure to specify Caterpillar power. Leading manufacturers of excavators, compressors and other construction machinery can furnish Cat Engines in their equipment.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

A WORD TO THE WISE—STANDARDIZE!



You save time on the job — and you save on gasoline besides — with the most rugged, most powerful Advance-Design trucks ever built!

You can speed up construction hauling schedules and cut down your costs at the same time with new heavy-duty Chevrolet trucks. They bring you extra reserves of power—time-saving acceleration and hill-climbing ability—in the mighty "Jobmaster 261" engine*. It's the most powerful Chevrolet truck engine ever built—and it delivers more operating economy, too!

NEW DRIVING EASE

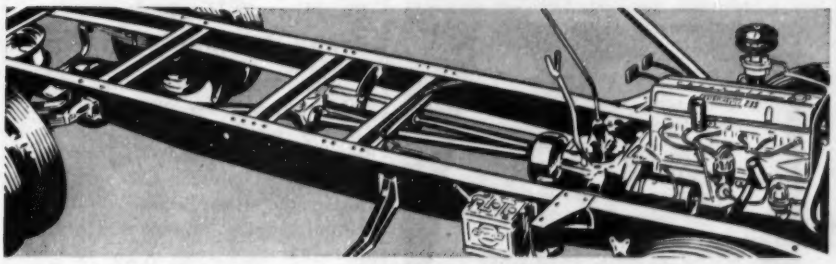
Here's another advantage you get with the new "Jobmaster 261" engine. Since the driver commands more power at all engine speeds, there's less need for gearshifting on grades . . . fewer downshifts in traffic.

NEW DRIVER COMFORT

The new Comfortmaster cab has everything a truck driver wants—new one-piece curved windshield; new, more convenient instrument panel and controls. And the new Ride Control Seat* offers the last word in driver comfort. Seat cushion and back move as a unit to eliminate back-rubbing. Now's a good time to talk trucks with your Chevrolet dealer! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

CHEVROLET ADVANCE-DESIGN TRUCKS

NEW CHEVROLET TRUCKS



New, stronger drive line

New, stronger drive lines in all heavy-duty models mean extra stamina . . . longer truck life.

New frame ruggedness

More rigid frames resist twisting and weaving in big-load, off-the-road construction hauling.

MOST TRUSTWORTHY TRUCKS ON ANY JOB!

Plus all these Advance-Design truck features: THREE GREAT ENGINES—The new "Jobmaster 261" engine* for extra-heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. SYNCHRO-MESH TRANSMISSION—DIAPHRAGM SPRING CLUTCH—HYPOID REAR AXLE—TWIN-ACTION REAR WHEEL BRAKES on heavy-duty models. DUAL-SHOE PARKING BRAKE on heavy-duty models. NEW RIDE CONTROL SEAT*—NEW, ROOMIER PICKUP, STAKE AND PLATFORM BODIES—NEW COMFORTMASTER CAB—PANORAMIC WINDSHIELD—BALL GEAR STEERING—NEW ADVANCE-DESIGN STYLING.

**Optional at extra cost. Ride Control Seat is available on all cab models, "Jobmaster 261" engine on 2-ton models.*

SPEED UP
HEAVY HAULING
WITH THE
Heavy Duty
KAL-TRUK

Can be loaded by hopper, mixer, ready-mix truck, or by hand.

Central gate for narrow form pouring.

It can be used as a dump truck . . .

. . . with a flat tilting platform (for brick slabs, etc.)

. . . with or without front and side gates.

Versatile
Powerful
Maneuverable

You'll Cut Costs—
Wasted Time—
Back-Breaking Labor

America's finest construction truck offers 3-wheel maneuverability—its turning radius is only 6½ ft. The Kal-Truk delivers man-killing loads—up to 3,000 lbs. of bulk material—brick, steel, etc. A Kal-Truk is a jack of all trades, built for years of heavy duty service—engineered to help builders cut costs. 14-HP, 2-cyl., air-cooled engine—easily climbs 20 to 30 degree ramps. 3 forward speeds, 1 reverse. Write Dept. CM-5 for information.

KALAMAZOO
MANUFACTURING COMPANY
1827 Reed St. Kalamazoo, Mich. U.S.A.
FOR OVER 41 YEARS SERVING INDUSTRY AND RAILROADS ALL OVER THE WORLD

JOB TALK . . . Continued from page 6

drainage machine used to place the cardboard.

The high-masted, self-propelled machine carries a large roll of cardboard strip which is stabbed into the ground 32 ft deep with a hollow tube that carries the cardboard along as it is pushed into the earth. As the tube is withdrawn, the length of strip is left in the ground and acts as a wick to drain surrounding water.

These wicks are inserted approximately every 6 ft by Emschergenossenschaft and the Hamborner Bergau A. G., who are using the method, first developed in Sweden.

Ice-Filled Drill Drives Easily

Freezing water inside a perforated drill point for chemical injections has eliminated sand infiltration encountered by Soil Testing Services, Inc., Chicago. Sand entering hollow drill points, as they are driven to depth in chemical soil-stabilization work, often has clogged them sufficiently to make chemical injection difficult.

Soil Testing Services first places the injection section of its drill rod inside a pipe casing and surrounds the rod with crushed dry ice. After the section is well chilled, water is introduced into the hollow drill and allowed to freeze. When frozen, the drill is attached to a drill rod and driven to desired depth, with the ice core keeping out sand particles. Warm water is sent down then to melt the ice and chemical injection can begin.

Emotional Factors Breed Accidents

"People with emotional problems are high accident risks," says Dr. Eleroy L. Stromberg, director of training and personnel research for the B. F. Goodrich Co.

He states that mentally and emotionally handicapped persons are greater risks than the physically handicapped. Persons who bring fear, worry, unrest, illness, boredom, mental fatigue, anger and irritability to the job often could be called "accidents looking for a time and place to happen."

Every superintendent and foreman must try to recognize symptoms of a pre-accident personality and plan other activities for those who need special temporary safeguards.

40 CRANE CAPACITIES OFFERED BY LORAIN...

but there are more to cranes than just capacities. Lorain Cranes are much more than shovel turntables with crane booms attached. Instead, the Lorain Crane line embodies features designed especially for profitable, heavy-duty lifting crane service . . . features such as power load lowering, precision boom hoist, third drum attachment, throttle control of load, hydraulic coupling (no slam-bang or jerk), all-purpose boom heads, pin-connected booms, air controls. These and many others give you a real, honest-to-goodness lifting crane when you buy Lorain. See your nearby Thew-Lorain Distributor for details.

THE THEW SHOVEL CO., LORAIN, OHIO, U. S. A.

THE LORAIN.

CRANES

FROM 6 TO 61 TONS

WITH LONG BOOMS

WITH SHORT BOOMS

WITH TIP EXTENSIONS

ON WIDE CRAWLERS

ON LONG CRAWLERS

AS MOTO-CRANES

AS SELF-PROPELLED CRANES

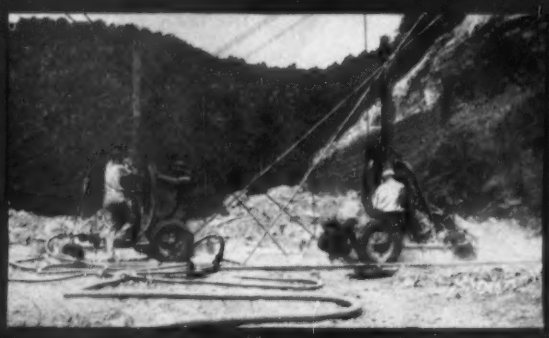
another big job goes GARDNER-DENVER . . .

117

GARDNER-DENVER

WAGON DRILLS

On Contracts No. 288 & 288



On Contract No. 288

On Contracts No. 288 & 288

On Contract No. 288

Out of 185 wagon drills on the West Virginia Turnpike . . . **117** were Gardner-Denvers! **47** Gardner-Denver Two-Stage Water-Cooled Portable Compressors supplied air on this job! That's the report from 26 West Virginia Turnpike contracts held by contractors assembled from all parts of the country.

On Contract No. 21

SET THE DRILLING PACE...
on the West Virginia Turnpike

On Contracts No. 23B & 24A

On Contract No. 23A

SINCE 1859

GARDNER-DENVER

WB COMPRESSORS · GROUT PUMPS · AIR MOTORS · COMPRESSOR OUTFITS · TRAILER COMPRESSORS · CENTRIFUGAL PUMPS · RX COMPRESSORS · HA COMPRESSORS

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

"IN 25 YEARS...

WE HAVE NEVER FOUND FAULT WITH YELLOW STRAND!"

REPORTS H. W. "JACK" HARTMANN, McDOUGAL-HARTMANN CO., PEORIA, ILLINOIS

The hard-working fleet of construction equipment owned by McDougal-Hartmann Co. includes tractors, 'dozers, scrapers, cranes, shovels, pavers, batching plants *and* Yellow Strand Wire Rope!

There are good reasons why Yellow Strand is the preferred brand for McDougal-Hartmann Co. as "Jack" Hartmann, Vice-President and General Manager of the company, will tell you:

"We first became acquainted with Yellow Strand more than twenty-five years ago and as yet, we have never found a fault in this wire rope. We've always been more than satisfied with the performance of Yellow Strand.

"Another reason we like Yellow Strand is the excellent service we get from our Broderick & Bascom distributor. In fact, he's setting up our Speedi-Service Plan right now. We're going to make full use of Speedi-Service!"

You can ask Jack Hartmann or any other veteran of the construction industry about Yellow Strand. You'll see why Yellow Strand is the *preferred* brand. Specify Yellow Strand on your next wire rope order and take advantage of Speedi-Service!

BRODERICK & BASCOM ROPE CO.
4203 Union Blvd. • St. Louis 15, Mo.

SPECIFY
Yellow Strand®
FOR SAVINGS . . . SAFETY . . . SPEEDI-SERVICE

LOOK JOE! SAW CONCRETE & ASPHALT WITH A... Clipper CONSAW

The photos below illustrate typical concrete and asphalt removal practice now being employed by hundreds of Utilities, Municipalities, Contractors and Maintenance Crews in Streets, Floors and Sidewalks. The benefits include lower maintenance costs, lower installation, repair and replacement costs.

SAVES-

...UP TO 50% on REMOVAL TIME

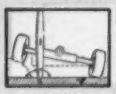
... UP TO 50% on REPLACEMENT COSTS

CUT COSTS by Sawing Contraction Joints—Trench and Patch Openings in Concrete & Asphalt

Save up to 50% in labor and material. Saw repair patches—water, gas, sewer and air line trenches in floors, streets, walks, highways. Save too, by sawing contraction joints in floors and highways...eliminate costly hand forming and spalling.

"4 OUT OF 5" BUY CLIPPER CONCRETE SAWS. Three-Point Suspension holds the blade straight and true in the cut—eliminates binding—twisting—drifting—sidewear and friction. The patented water application assures adequate coolant at all times—increased blade life and speed. Perfect balance and Dashboard Controls for operating ease and maneuverability.

Experience Proves a Concrete Saw Must Have These Clipper Features for MAXIMUM ECONOMY



3-POINT SUSPENSION

WATER SPRAY SYSTEM

INSTANTLY MANEUVERABLE

FREE TRIAL ON YOUR JOB!

This unqualified Clipper guarantee of satisfaction is backed by Nearly 20 Years of world-wide experience, the ability to select the finest materials and the "know-how" to put them together. ORDER TODAY...on FREE TRIAL. Discover for yourself how Clipper will increase your profits!

WORLD'S LARGEST MANUFACTURER OF MASONRY AND CONCRETE SAWS

...by the ORIGINATORS OF CLIPPER MASONRY SAWS

...the First and Only saw in the world that will cut every masonry material regardless of size and hardness. Clipper outperforms them all for ONLY Clipper is "CONVERTIBLE" and has the Exclusive-Patented Features for **flexibility.** A Clipper model to fit any job—any budget. Sold on FREE TRIAL... Priced from $265.

MODEL C-130—One of 5 Models—Gas or Electric Powered. From $465. up.

Quality is Consistent... Economy Certain with CLIPPER SUPERIOR DIAMOND BLADES

...guaranteed to..."Provide the fastest cut...at the lowest cost...with the greatest ease!" Clipper alone can supply every necessary metal bond... in over 36 specifications.

Clipper

SAME DAY SERVICE FROM YOUR NEAREST FACTORY BRANCH—

KANSAS CITY 8, MISSOURI

COAST TO COAST

- PHILADELPHIA
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- MILWAUKEE
- ST. PAUL
- INDIANAPOLIS
- NEW YORK
- PITTSBURGH
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MAIL COUPON NOW

SOLD ONLY DIRECT FROM FACTORY BRANCHES

CLIPPER MANUFACTURING CO.
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11-C

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

IT'S HERE! The new

FULL 1-YARD SHOVEL-CRANE

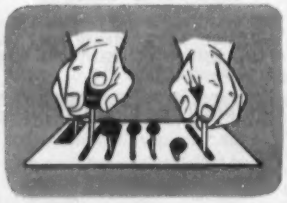
with Speed-o-Matic® power hydraulic control!

Now, for the first time in the heavy-duty 1-yd class, you can buy a machine combining unsurpassed productive capacity and maneuverability with practical transportability. In fact, an LS-98 with Speed-o-Matic control gives you the greatest productive capacity of any shovel-crane conveniently transportable over most state highways.

Two years of rugged field testing proved the LS-98 outstanding from both productive and service cost standpoints. It's an ideal machine for widely scattered operations as well as for large production jobs. Fully convertible, the LS-98 is your answer to handling more work at less cost.

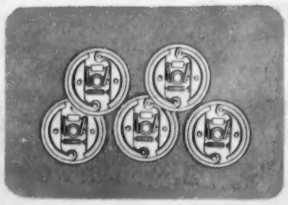
Here are only a few of the many important features that cut costs . . . boost output

Included as standard equipment are foolproof power steering and independent rapid boom hoist. These and many other advantages enable you to secure greater output at lower cost.



Fingertip, Speed-o-Matic control is easy on the operator . . . cuts end-of-the-shift letdown . . . helps increase output by up to 25%! Smooth, instant response eliminates jerk, jump or lag.

Greater usable hp, more live weight The LS-98 advanced design insures more efficient application of engine horsepower . . . incorporates greater live weight and strength to utilize extra horsepower.



Interchangeable, shoe type clutches The exclusive, self-adjusting Speed-o-Matic clutches are internal-expanding . . . easily accessible . . . all are interchangeable . . . clutch shells are alloy cast iron.

LINK-BELT SPEEDER LS-98

Get all the facts now on the great LS-98
. . . the industry's most advanced 1-yd machine

For complete details on how and why the LS-98 is your best answer to the problem of rising costs and shrinking profits, see your Link-Belt Speeder distributor. In many cases, he'll be able to give you an actual demonstration . . . let you prove for yourself why the LS-98 is great—truly the most advanced machine in the shovel-crane industry.

LINK-BELT SPEEDER CORPORATION
Cedar Rapids, Iowa

13,400

ASK FOR THE "INSIDE STORY"

See your distributor or write for the 98 Series catalog and the new booklet which gives you the "Inside Story" on Speed-o-Matic control.

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

LINK-BELT SPEEDER

IT'S YOUR BUSINESS . . . Continued from page 12

Equipment Purchases Will Hold Close to '53

State highway departments are budgeting $39.4 million in equipment purchases during '54, a slight 0.5% dip under the '53 total. Adding to this the $0.6 million in new equipment budgeted by three turnpike and highway authorities (Maine Turnpike Authority, N. J. Highway Authority, and West Virginia Turnpike Commission) '54 purchases will actually be a little higher than in '53.

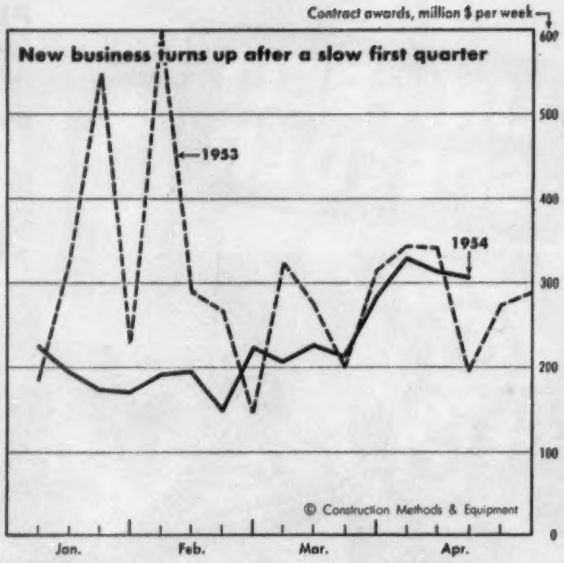
Two regions, New England and the Far West, report more equipment purchases budgeted tax for '54 than '53. In the Middle West and states west of the Mississippi and east of the Rockies, highway departments expenditures for equipment average out about the same in '54 as last year. But in the South, the states will buy 14% less new equipment this year, as substantial reductions by Virginia, Georgia, Florida, Alabama, and Louisiana offset increased purchases by Kentucky.

Highways Help Spark Upturn in Contracts

As we told you last month, new heavy construction business is rebounding fast from the slow start in January and February. The upturn in March led to a big surge in April contracts which topped $300 million in each of the first three weeks.

If this trend continues, April will be the first month in '54 to top contract volume in the same month a year ago.

Highway contracts, averaging $50 million per week so far in April have been more than double the average weekly volume in March and they are running 8% higher than in April '53. Due largely to this big increase in highway work, total non-building contracts so far in April have averaged nearly $100 million per week, 60% higher than in March.



However, non-building construction contracts in April are running 19% lower than in April '53 and for the first 15 weeks of '54 they were off 21% from '53.

(Continued on page 26)

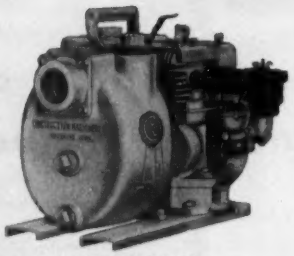
CMC BIN BATCHERS AND JOB MIXERS MAKE AN UNBEATABLE COMBINATION

CMC Bin Batcher and 16S Mixers in Action

Whether charging an individual CMC 11S or 16S mixer or pair as shown above, a CMC Bin Batcher is the short cut to bigger profits.

Two or three compartment bins with a wide chain of travelling weighers and optional equipment. Matching bulk cement bins if desired.

CMC DUAL PRIME PUMPS ARE LIGHTER WEIGHT YET LONGER LIVED



4M — 4000 G.P.H.

New dual volute design makes priming rapid, automatic and dependable. Unipacked shaft seal is protected by rapidly spinning liquid screen. Fewer parts — easier to service.

ALL SIZES

Built in all pipe sizes 1½" through 4". Other CMC Dual Primers in 6", 8" and 10" sizes with capacities to 240,000 G.P.H. Larger pumps have water cooled engines — gasoline or diesel. Also full line of electric pumps and pumps for belt drive.

40M — 40,000 G.P.H.

SOLD & SERVICED BY AMERICA'S BEST DISTRIBUTORS

CONSTRUCTION MACHINERY COMPANIES . . . . . WATERLOO, IOWA

now—

a 4-WHEEL DRIVE Excavator-Loader with *plus* features for *plus* performance

TRACTOMOTIVE TL-12 TRACTO LOADER

4-WHEEL DRIVE for excellent traction — excavating or loading — even under adverse ground conditions . . .

PLUS HYDRAULIC TORQUE CONVERTER DRIVE for smoother, faster operation. No ramming or clutching, no engine stalling . . . easier maneuvering, snappy bucket action!

PLUS CLUTCH-TYPE TRANSMISSION Eliminates most shifting. Operator simply pushes a lever to go forward, pulls it back for reverse. He can work all day without shifting gears on short-haul jobs!

PLUS REAR-WHEEL POWER STEERING This advantage together with all-wheel drive means easy steering and maneuvering under all operating conditions.

PLUS NEW, DYNAMIC ALLIS-CHALMERS POWER-CRATER ENGINE Gives you high-octane performance on regular gasoline.

• • •

Yes, here's 4-wheel drive PLUS . . . PLUS all the advantages Tractomotive offers you in its famous TL-10 Tracto-Loader — the outstanding performer on bulk material handling. Choose the model that fits your needs.

Wire, write or call for a demonstration NOW!

POWER-CRATER is an Allis-Chalmers trademark

Weight: 12,000 lb.
Bucket Capacity: 1 cu. yd.
Speeds — 4 forward, to 20 mph . . . 4 reverse, to 25 mph
Brake Hp. — 63

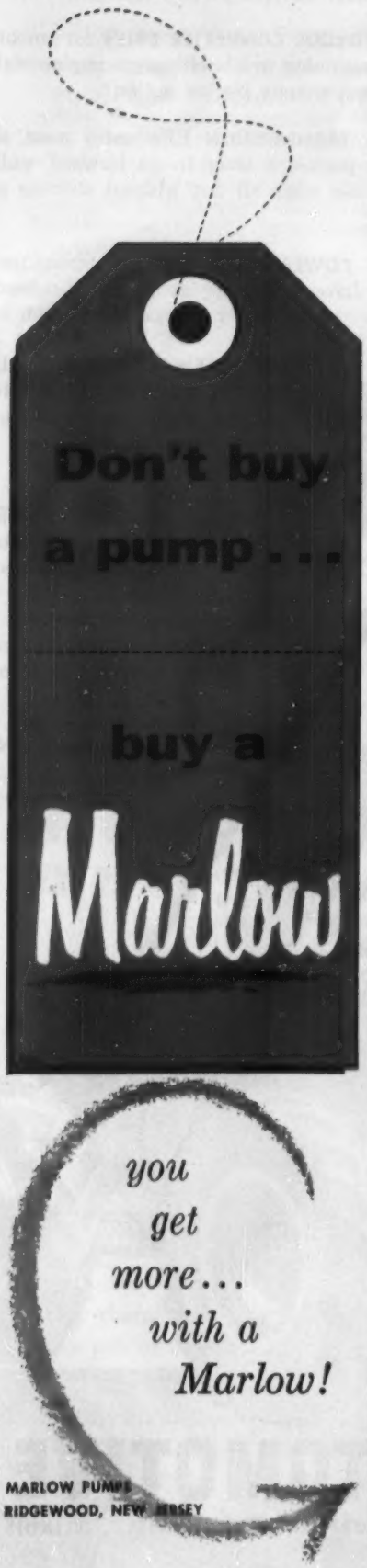
MODEL TL-10 for all types of bulk material handling . . . with short, 11-ft. turning radius, torque converter drive, clutch-type transmission and Allis-Chalmers POWER-CRATER engine. ¾ cu. yd. bucket, weight 11,400 lb., 63 brake hp.

See your nearest Allis-Chalmers Industrial Tractor Dealer

TRACTOMOTIVE

TRACTOMOTIVE CORPORATION, DEERFIELD, ILLINOIS

Tracto-Loaders · Tracto-Shovels, Side Booms and Hydraulic Rippers for Allis-Chalmers Crawler Tractors · Loader and Shoulder Maintainer for Allis-Chalmers "D" Motor Grader



IT'S YOUR BUSINESS . . .

Continued from page 24

Drop in New Work Partly Due to Lower Prices

Part of the 21% decline in nonbuilding construction this year is due to lower bid prices. The continued tough competition this year has forced contractors to bid 10-15% below engineering estimates. In fact, bids as much as 30% below estimates were not too unusual. In view of this, actual physical volonly 10% from last year.

Some contractors have been bidding at or even below their costs ume of construction could be down just to keep their organizations together. But with the volume of new work increasing fast in recent weeks, the pressure on construction should ease and bid prices should recover. It is significant that one state highway department figures that bid prices which have been averaging 10-12% below estimates will be only 3-4% under estimates by mid-year.

Better availability of materials and an easier labor market have helped contractors estimate their costs with more assurance and this situation is expected to continue. Also, materials prices in general have been stable so far this year and wage increases will probably be less than in '53.

SOME BIG CONTRACT AWARDS OF THE MONTH

Hendrickson Bros., Inc., 63 N. Central Ave., Valley Stream, N. Y. Contract 6 of Southern State Parkway improvement for Jones Beach State Parkway Authority, Belmont Lake State Parkway, Babylon, L. I. $5,077,000.

Walsh Construction Co., 122 E. 42nd St., New York 17; **George A. Fuller Co.,** 597 Madison Ave., New York 22, and **Slattery Contracting Co.,** 46-39 54th Road, Maspeth, N. Y. New York Coliseum Convention Hall and Exhibition Hall including 22-story office building, Columbus Circle, New York, for the Triborough Bridge & Tunnel Authority, Randalls Island, New York. $26,000,000.

Doyle & Russell, Central National Bank Bldg., Richmond, Va. Tuberculosis Sanitarium and St. Philip Hospital at Richmond, Va. for the Medical College of Virginia, 1200 East Broad St., Richmond, Va. $3,686,340.

James McHugh Construction Co., 6449 S. Park Ave., Chicago, Ill. 12-story general building, Chicago & Wabash Aves., Chicago, for Holy Name Cathedral, 730 N. Wabash Ave., Chicago. $4,000,000.

Morrison-Knudsen Co., Inc. and **Landers & Griffin Co., Inc.,** 122 E. 42nd St., New York City. Schedules 1 and 2, construction of roads, railroads and utilities for Air Force Base at Portsmouth, N. H. for U. S. Engineers, 857 Commonwealth Ave., Boston, Mass. $2,911,609.

Foster-Wheeler Corp., 2118 Fannin St., Houston, Tex. Design and construct fertilizer chemical plant at Timpson, Tex. for United Chemical Co., c/o Grover Hartt, Jr., Fidelity Bldg., Dallas, Tex. $18,000,000.

Gebhard-Berghammer, Inc., 5420 W. State St., Milwaukee 8, Wis. Club house in Milwaukee for Young Men's Christian Association, 633 N. 4th St., Milwaukee 4, Wis. $3,500,000.

L. G. DeFelice & Son, Inc. and **C. J. Langenfelder & Son, Inc.,** North Haven, Conn. 6.53-mi access and 7.61-mi access to New York State Thruway-Hudson Section for Bureau of Contracts & Accounts, The Governor Alfred E. Smith Bldg., Albany, N. Y. $11,234,568.

Construction Division, E. I. duPont de Nemours & Co., Inc., duPont Bldg., Wilmington 98, Del. Cellophane plant, Covington, Ind., for Olin Industries, Inc., East Alton, Ill. $20,000,000.

Marinucci Bros & Co., Inc., 51 Ceylon St., Roxbury, Mass. Section 3, highway and bridge construction for the South East Expressway for Commonwealth of Massachusetts, Department of Public Works, 100 Nashua St, Boston, Mass. $2,655,-848.

Tecon Corp., 1201 Main St., Dallas, Tex., paving apron, runway, taxiways for Little Rock Air Force Base, Jacksonville, Ark., for U. S. Engineers, Gay Bldg., Little Rock, Ark. $4,159,384.

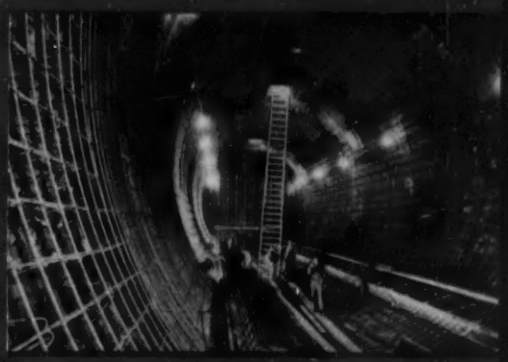
A. V. Taurasi, 139 Jacques St., Somerville, Mass. Highway and bridge construction, Route 128 to Greenledge St., Dedham, Westwood and Needham, Mass. for Common-

(More Big Jobs on page 164)

in the Construction Industry...

Marlow leads in sales

there's a reason...



DEPENDABILITY

More contractors are buying more Marlow Self-Priming Pumps than any other—*because Marlows can take tough abuse* without failure and without costly shut-downs. All dewatering is dependably handled with just two types of Marlows—Self-Primers for high capacity pumping and "Mud Hogs" for muddy and trash-laden water. For complete data, see your Marlow dealer or write for Bulletin C-52.

The Most Compete Line of Contractor's Pumps

MARLOW PUMPS • RIDGEWOOD, NEW JERSEY

SO YOU WANT TO GET INTO THE ASPHALT BUSINESS--

UNIVERSAL Speed Batch . . . push-button control asphalt plant

Two men can operate it — and neither needs to be highly skilled. You have centralized control over the entire plant with electric push-button and pilot control valves. Easy to operate, clearly labeled push-button controls eliminate guesswork and make it a simple matter for the operator to speed up the production cycle.

Minimum investment required — and operating costs are low. You can make a production run or one batch, change mixes as often as you need to with hardly any delay, dry only the exact amount of aggregate to be used. Maintenance cost is low, too, with all parts easy to inspect and adjust.

A high quality plant — Like all Universal equipment, the Speed Batch Model 2000 is quality engineered throughout. For example: drying drums are heavily insulated to retain heat and increase plant output; plant is highly portable with dryer, pugmill, dust collector and all power and controls on one sturdy frame — meets highway limitations; piping is simplified, with one connection each to Bitumen and fuel supply lines.

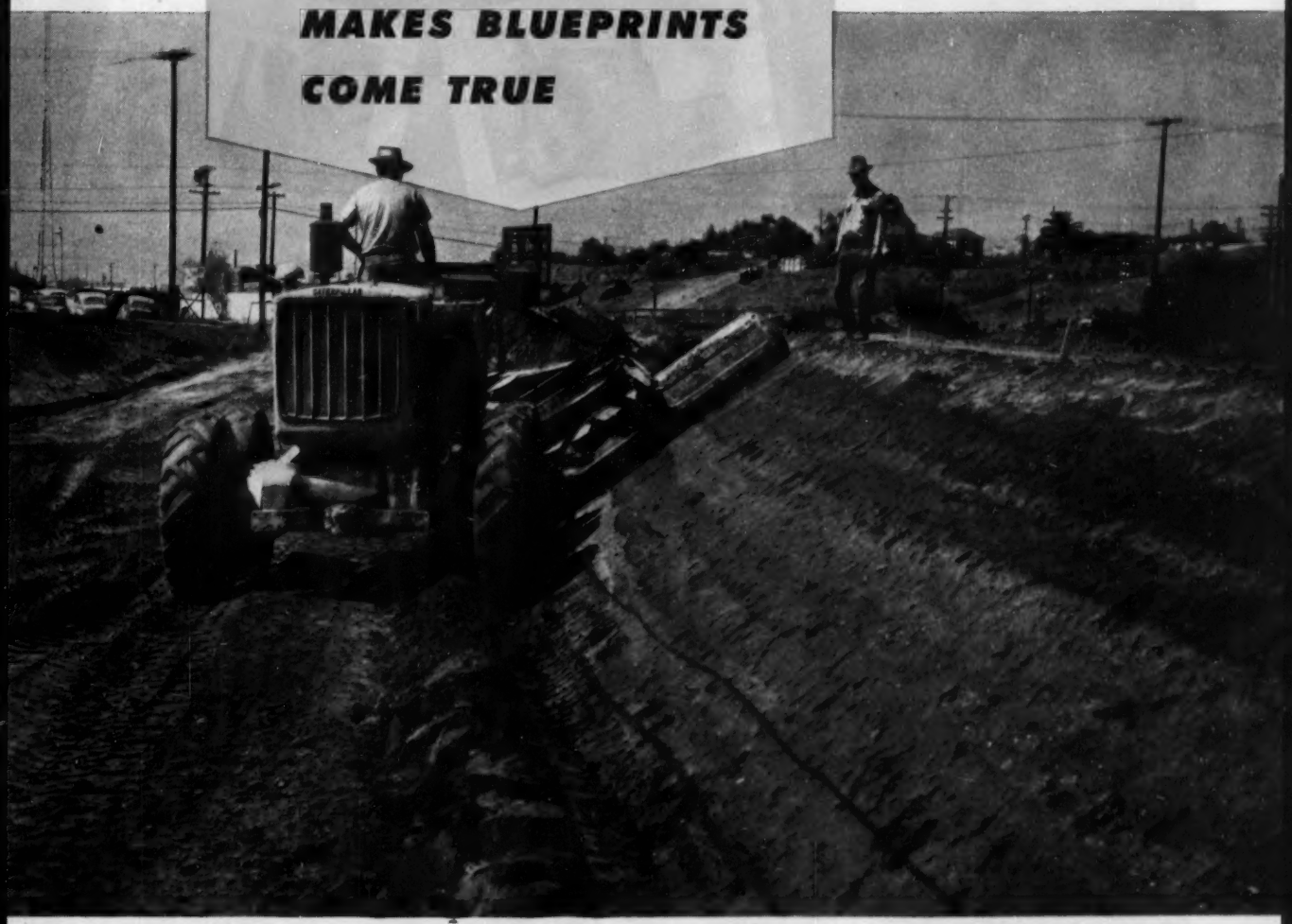
Get full information now — Yes, this is your plant, if you want to get into the profitable asphalt business without a heavy investment. See your Universal distributor or write today for an 8 page illustrated booklet on the Universal Speed Batch Model 2000 Asphalt plant. Write Universal Engineering Corporation, 327 8th Street, N.W., Cedar Rapids, Iowa.

PETTIBONE
UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION
327 8th Street, N.W., Cedar Rapids, Iowa

A Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division St. Chicago 51, Illinois

THE No. 12 MAKES BLUEPRINTS COME TRUE



This No. 12 Motor Grader, owned by Daley Corp., is bank-sloping for a canal along the new Wabash Freeway, San Diego, Cal.

When the engineers ask for a clean 40-degree bank, put a Cat* No. 12 Motor Grader on the job. You'll get it, right down to fractions of an inch. And the best of it is that any good operator can work accurately with this machine. Here are some of the features that make the No. 12 outstanding:

- Caterpillar-built throughout, with balanced power, weight and speed.
- A steady-going 100-HP engine directly powers all controls, eliminating leaky hydraulic lines.
- Operates on low-cost No. 2 furnace oil without fouling.
- Full range of blade positions without changing links.
- Powerful control brakes prevent creeping under loads or vibration.
- Rugged construction—heaviest box-section drawbar circle on any grader.

Don Daley, of Daley Corp., San Diego, with ten big yellow units working on the Wabash Freeway, says: "Every year our faith in Caterpillar's engineering features, economy, long life, trade-in value and good dealer service is strengthened. The machine that stands up longest and does the job is the one to make money with."

Call your Caterpillar Dealer today for an on-the-job demonstration of the equipment that can make money for *you*.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

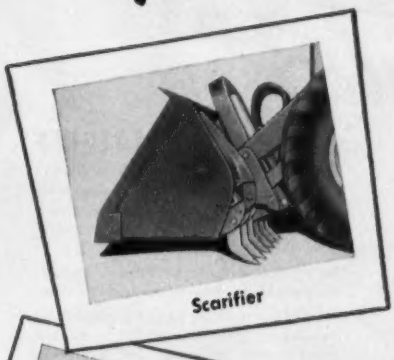
Rotary Snow Plow
Fork Lift
Bulldozer Blade
Crane Hook
V-type Snow Plow
Pusher Plate
Winch

Back Hoe

Operator Cab

attachments

—a big PAYLOADER® plus



Scarifier

Rigid and Reversible trip-blade Plows

"PAYLOADER" tractor-shovels equipped with standard buckets are extremely versatile. But the wide variety of available attachments greatly increases "PAYLOADER" usefulness and investment value — enables them to be profitably employed more days in the year.

So first choose the tractor-shovel that just *fits* your needs from the "PAYLOADER" line. It's the *one* complete line — seven *proven* models from 12 cu. ft. to 2 cu. yd. bucket capacity. Afterwards, you can acquire any of the special attachments, when and as you need them.

Your nearby "PAYLOADER" Distributor is ready to help you choose the model and attachments that best fit your needs. He also has the parts and service facilities to keep your "PAYLOADER" profitably productive. The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Illinois.

WRITE FOR FREE INFORMATION *on any "PAYLOADER" you are interested in: four-wheel-drive, rear-wheel-drive, front-wheel-drive — 12 cu. ft. to 2 cu. yd. bucket capacity.*

PAYLOADER®

THE UNBEATABLE COMBINATION FOR *Profit!*

IT'S YOURS IN THE Cedarapids Built by IOWA

SUPER TANDEM

ASK Super Tandem owners about Super Tandem performance! One contractor produced 3/4" minus material at a rate of 228 to 310 tons per hour with average percent of crush 20%. On this job, maintenance costs on the Super Tandem were less than three-fourths of a cent per yard! Figure out what this kind of low-cost production will mean on *your* jobs!

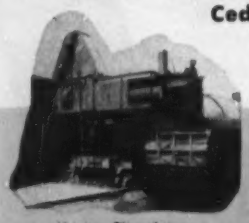
The Cedarapids Super Tandem is newly engineered for the extra high screening capacity that gives you a big advantage in any pit and is especially profitable where there is a high percent of fines or contaminated material.

Look over the features listed at the right, then ask your Cedarapids distributor to show you how you can apply them to your work for higher profits.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

CHECK THESE FEATURES

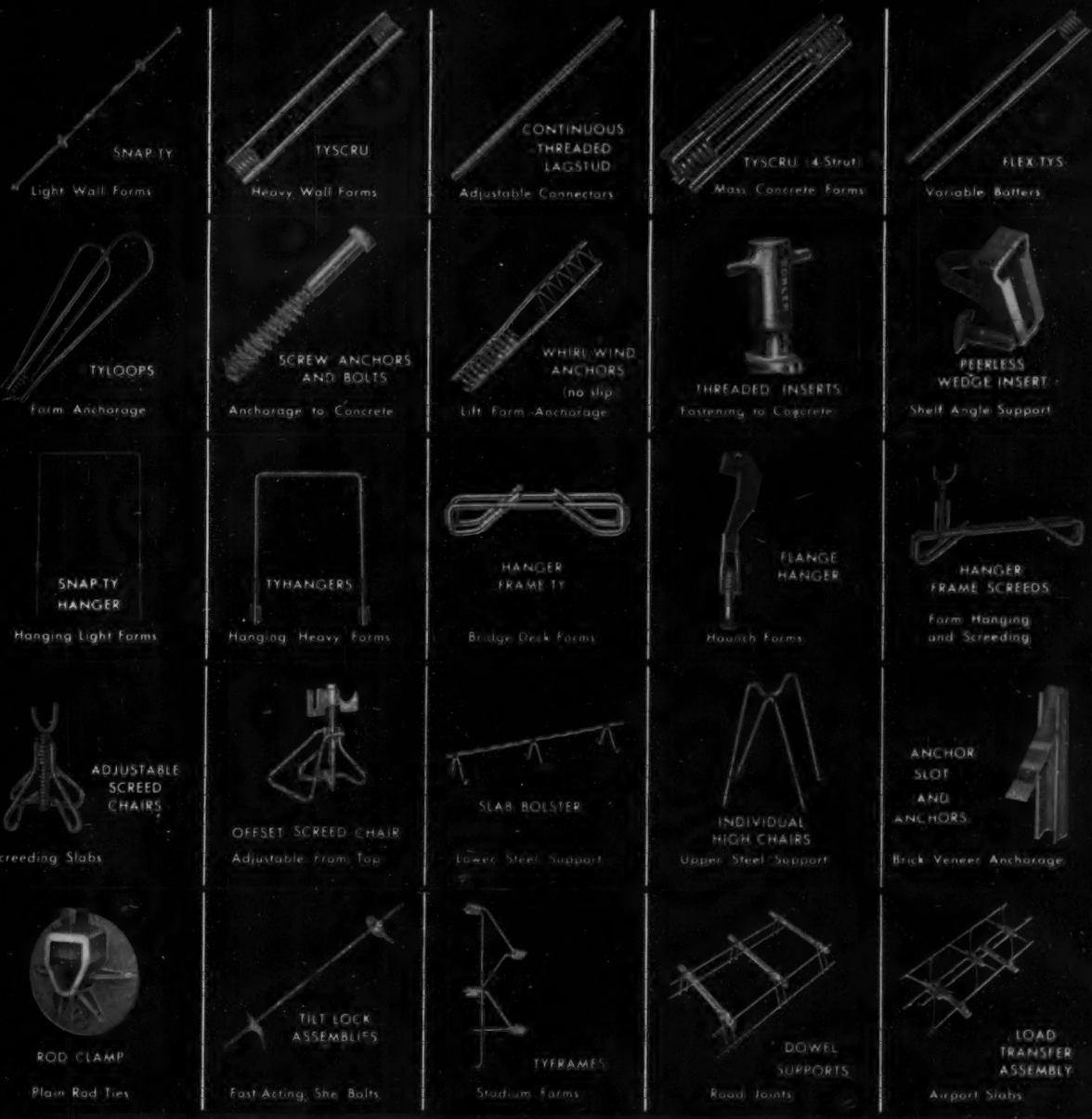
- √ Big 48" x 12' 2½ Deck Horizontal Vibrating Screen assures really high screening capacity, particularly desirable where gradation of a big volume of material is necessary.
- √ 2416 Roll Crusher and 1036 Jaw Crusher deliver a steady flow of crushed material.
- √ Flexibility with optional Swivel Feed Conveyor, Spray Bar attachments and Sand Ejector Screw to meet every job condition.
- √ Delivery conveyors, plant conveyor and under-crusher conveyor are 30" wide to handle the increased screening capacity of the plant.
- √ Quality construction of every unit cuts maintenance costs to the minimum, keeps plants operating all day every day to maintain your high production averages.


Master Bituminous Mixing Plant

Vibratory Soil Compactor

Motorized Head Pulley

Model G-60 6000-lb. Bituminous Mixing Plant



Every Minute of Every Day . . . a Richmond Product is Saving Time and Money . . . on Every Kind of Concrete Construction.

Illustrated are 25 of the products perfected by RICHMOND, pioneer in the concrete construction industry.

This is only a "drop" in the RICHMOND bucket! Our complete line is the largest in the field.

All, have one purpose: to help you do your job with greater speed, safety and savings!

INSIST ON RICHMOND
. . . AND BE SURE IT'S RICHMOND!

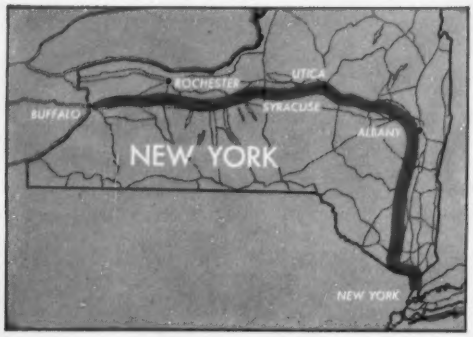
Richmond
SCREW ANCHOR CO., INC.

816-838 LIBERTY AVENUE • BROOKLYN 8, N.Y.
315 SOUTH FOURTH ST. • ST. JOSEPH, MO.

Send for new 1954 Catalogue

For our complete catalog see SWEET'S Industrial Construction File 21R; Architectural File 21R.

MEMBER Producers Council, Association of General Contractors, Associated Equipment Distributors, Reinforcing Steel Institute.



By the summer of 1955, you can drive from Buffalo to New York City over the 427-mile New York Thruway. Motorists and truckers are now using about 60 miles of the expressway, which has been called "the greatest highway in the world." Construction schedule is being met by 34 contractors, working for the N. Y. Thruway Authority.

Extra safety—On the four- to six-lane Thruway, inside lanes are one foot wider than outside lanes for safer passing. Contractors using GM Diesel-powered pavers put down 2,000 feet of single-lane concrete daily. *One who switched from gasoline to GM Diesel power saves 66% in fuel costs.*

How GM DIESEL POWER helps build

WORLD'S GREATEST HIGHWAY—

Contractors pushing the great New York Thruway to completion are using General Motors Diesel engines in more different types of equipment than any other Diesel. On big jobs and small, this rugged, yet compact, 2-cycle engine is the world's most widely used Diesel because it gets work done faster and costs less to operate and maintain. Let this great GM Diesel engine prove its superior performance on *your* job—just as it is doing on the New York Thruway!

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS
Detroit 28, Michigan
In Canada: GENERAL MOTORS DIESEL LTD., London, Ontario

It Pays to STANDARDIZE on

GM
GENERAL MOTORS
DIESEL POWER

. . . available in more than 750 models of equipment built by over 150 manufacturers

Bridging the Hudson—Concrete barge of Construction Aggregates Corp., with GM Diesel-powered crane and compressor, being moved in to pour piers. Three GM Diesel-powered tugs handle 50,000-ton tow against 5-mile tide.

Building grade in Mohawk River Valley, Grandview Construction uses fleet of Euclid trucks with GM Diesel power because of the faster grade climbing ability. GM Diesel engines also power 94 different excavators. *Parts interchangeability for these engines cuts costs.*

Knifing through rock—Battery of four GM Diesel-powered Gyro-Flo compressors used by Geo. M. Brewster & Son supplies up to 2,400 cu. ft. of air per minute, *under steady pressure*, to nine wagon drills working on a tough rock cut near Kingston.

Big push is delivered by fleets of GM Diesel-powered Allis-Chalmers tractors including world's largest crawler, the powerful HD-20, which moves biggest pay loads at higher speeds. *GM Diesels start quickly, respond to varying loads faster and have surplus power for extra life.*

He Knows!

EXPERIENCE is the truest guide to production efficiency and economy... and experience in the excavating and construction fields proves that Roebling wire rope is your one top choice for avoiding delays, cutting down replacements and saving wire rope dollars.

All over the country, large numbers of experienced wire rope users definitely prefer Roebling wire rope. Call your nearest Roebling office or distributor for a Roebling recommendation.

ROEBLING CF&I

A subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 81 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 2253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1930 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 331 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

18-yard 225 hp Terra Cobra TH-0142 with 10-speed transmission gives properly balanced power for top economy, performance and speed over a complete range of job conditions. Every feature was engineered to meet advanced requirements in the field.

Here's how you've helped design tomorrow's earthmover!

Right from the start, you **—the operator—the engineer—the service man—have designed the Terra Cobra. That's as it should be, since you live with earthmoving equipment and make it pay off. It started back in the days of 1938 when you told us what you needed, and we put together the first safe and practical unit of its kind with positive power steer, air brakes, and air-actuated power control unit. Your ideas ever since have sparked every advance, right up to the newest big, rugged ten-speed Terra Cobra TH-0142.**

Your ever-increasing needs **for better equipment will continue to shape new advances to help Wooldridge Earthmovers do a better job faster and cheaper. For instance, here are some of today's Cobra "plus" features which have come out of your experience:**

- 10-speed transmission
- Shorter turning radius
- Higher ground clearance
- Lower center of gravity
- "Live" air-actuated power unit
- PCU forward, out of dirt
- True boiling bowl loading
- Positive "roll-out" ejection with less tractive effort
- Maximum apron opening
- Positive power steering
- Oversized wheel bearings
- Raised "snorkle" air precleaner
- Full flow lube filtration
- Fuel tank trap with quick cleanout
- Flex hose used wherever possible
- Air filter on governor
- Steering valve with built-in pressure control
- 360° visibility
- Tilt seat stays dry when parked, foam rubber cushioned, with automotive type shocks

Versatile 15-yard, 180 hp Terra Cobra TH-0908 was another development inspired by contractors who said: "We want it." It incorporates same basic design features as larger models.

WOOLDRIDGE

WOOLDRIDGE MANUFACTURING COMPANY

Sunnyvale, California

TERRA COBRAS

TERRA COBRA WAGONS

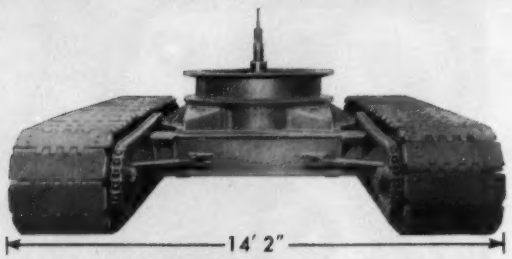
SCRAPERS

CABLE CONTROL UNITS

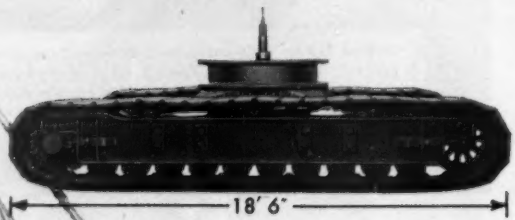
RIPPERS

BULLDOZERS

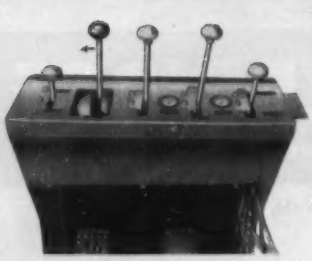
LIMA Introduces ...



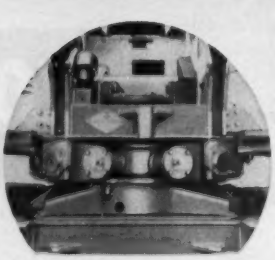
FOR MAXIMUM STABILITY . . . Crawlers are extra wide and long.



LIMA



3-WAY COMPENSATING VALVE
Loads can be snubbed or held in position through a compensating control valve, which permits simultaneous swing clutch and swing brake operation.



CONICAL HOOK TYPE ROLLERS
Weight is evenly distributed on the roller paths through six hook type conical rollers, four in front and two in the rear.

REMOVABLE SIDE FRAMES
Crawler side frames can be removed to meet most highway weight limitations when it is necessary to trail machine, or to keep within certain rail clearances.

.... Type 703-SC 50 TON CRANE with extra stability and easy portability

The new LIMA Type 703-SC is designed to give you unequalled crane performance for tough lifting jobs. Each part is engineered to meet the most rigorous operating requirements.

Even more important to *you* . . . Lima's long experience producing the very finest construction equipment is responsible for these important *bonus benefits* with the Lima Type 703-SC:

Greater Stability — Extra-wide, extra-long, heavy duty crawlers insure maximum stability at all times. The result is greater load capacity.

Unequalled Portability — The Type 703-SC is designed with portability in mind. Its removable side frames are an important factor in transporting it over state highways having weight limitations. The Type 703-SC is also available with wagon or truck mounting to provide maximum mobility with minimum travel time between jobs. Wagon mounted crane is powered by one engine—including travel—with one operator. Truck mounted crane requires two engines; one for travel and one for operating machinery.

Investigate the outstanding performance you can get from the Lima Type 703-SC 50 ton crane. Send today for Bulletin No. 73-SC-A which gives full details—specifications, operating capacities, etc.—or call your nearby Lima distributor.

COMPARE! No other machine gives you as much as LIMA!

1. Bronze bushings in tread, idler and drive rollers are protected by piston-ring type dirt seal rings and retainers.
2. All gears, smaller parts and shafts which are subject to extra wear are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation to eliminate excess counterweight.
4. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.
5. Big capacity drums and sheaves lengthen cable life by reducing the need for double wrapping and sharp bends in cable.
6. Machine cut propel and swing gears and roller chain power takeoff are enclosed in a sealed oil bath for dirt elimination and smoother, quieter operation.
7. Crawler side frame assemblies are easily removed to comply with most highway limitations when trailing machine from job to job.
8. Full air controls on travel, hoist, swing and boom hoist, result in smoother, more precise operation, minimum maintenance and less operator fatigue.

. . . a type and size for every job

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

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SHOVELS • CRANES
DRAGLINES • PULLSHOVELS

BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
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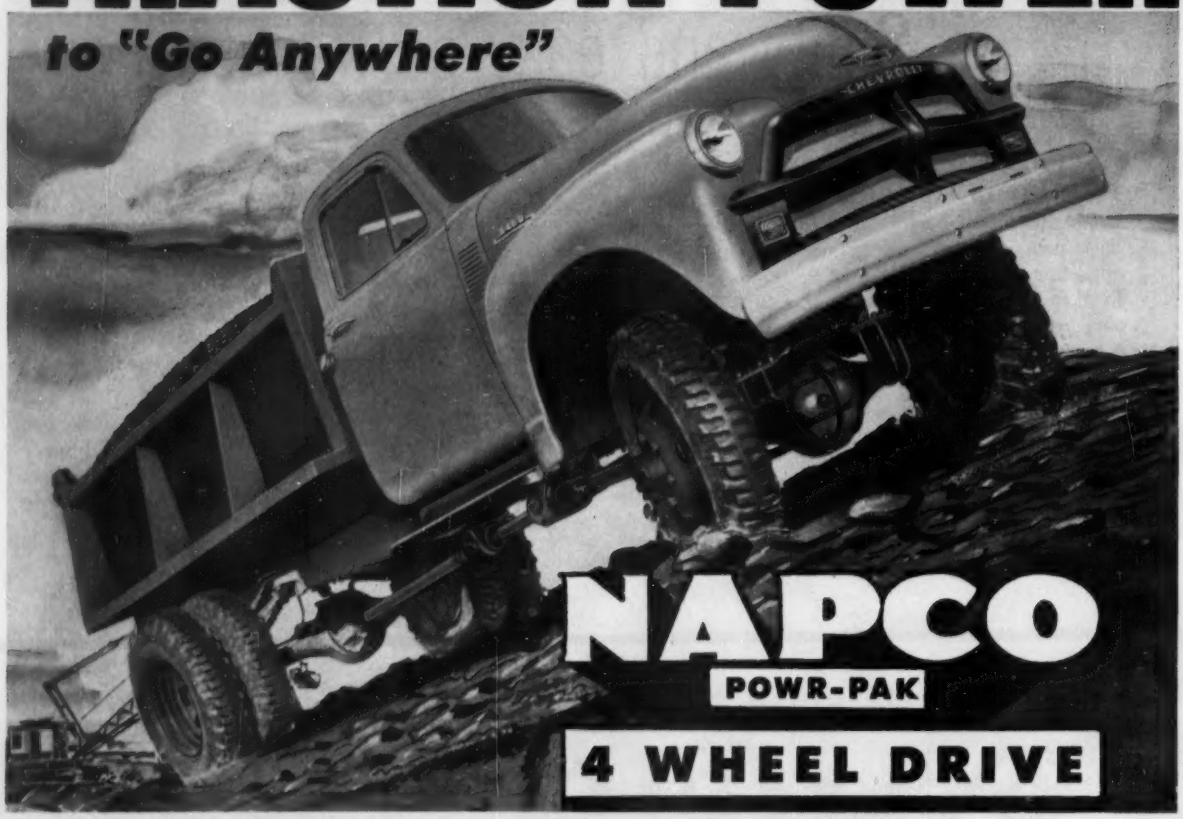
Construction Equipment Division

TRACTION POWER



***Completely Proven**

A *new improved model* of the same military-type 4 wheel drive chosen by the U. S. Armed Forces for the hundreds of thousands of Chevrolet trucks used throughout the world during World War II.

Utilizes Standard Replacement Parts

Because all replacement parts for the entire differential of the front axle assembly are available at any Chevrolet dealer, many of the maintenance problems formerly associated with 4-wheel drive units for Chevrolet trucks have been solved.

Standardizes Your Fleet

Chevrolet trucks equipped with the NAPCO 4 wheel drive remain unchanged except for the addition of the Powr-Pak itself. No special maintenance stock of parts is needed.

See our specifications in the **CCJ** Truck Specifications Section—April issue.

WITH 2 SPEED RANGE FOR

CHEVROLET TRUCKS

UTILIZING STANDARD REPLACEMENT PARTS

Now, for the first time, you can buy a Chevrolet truck, world's best truck value, equipped with NAPCO Powr-Pak, world's most proven* 4-wheel drive. Your local Chevrolet dealer can order your new Chevrolet truck equipped with the NAPCO Powr-Pak, or can convert trucks of your present fleet.

NAPCO's Powr-Pak gives your Chevrolet trucks the extra traction power to "go anywhere" . . . over rough terrain, through ice and snow, mud and sand! It reduces costly "down time" . . . it enables you to keep bigger payloads rolling whether it's over highways or across tough "off the road" terrain.

What's more, NAPCO Powr-Pak equipped Chevrolet trucks give you all the ease of handling features you've always wanted. At high speed operation over highways there's not a trace of whip or weave . . . no fighting the wheel. And, when the going gets tough "off the road," just a flip of a lever gives you finger tip control of the extra traction power necessary to get bigger payloads through on schedule. The normal easy turning and handling characteristics of Chevrolet trucks are not affected by the NAPCO Powr-Pak installation.

See your Chevrolet dealer, or write for complete information! The low cost of a completely equipped Chevrolet 4-wheel drive truck will surprise you —hundreds of dollars less than any 4-wheel drive in comparable capacity.

NAPCO PRODUCTS DIVISION

NORTHWESTERN AUTO PARTS CO. **834 N. 7th St., Minneapolis, Minn.**

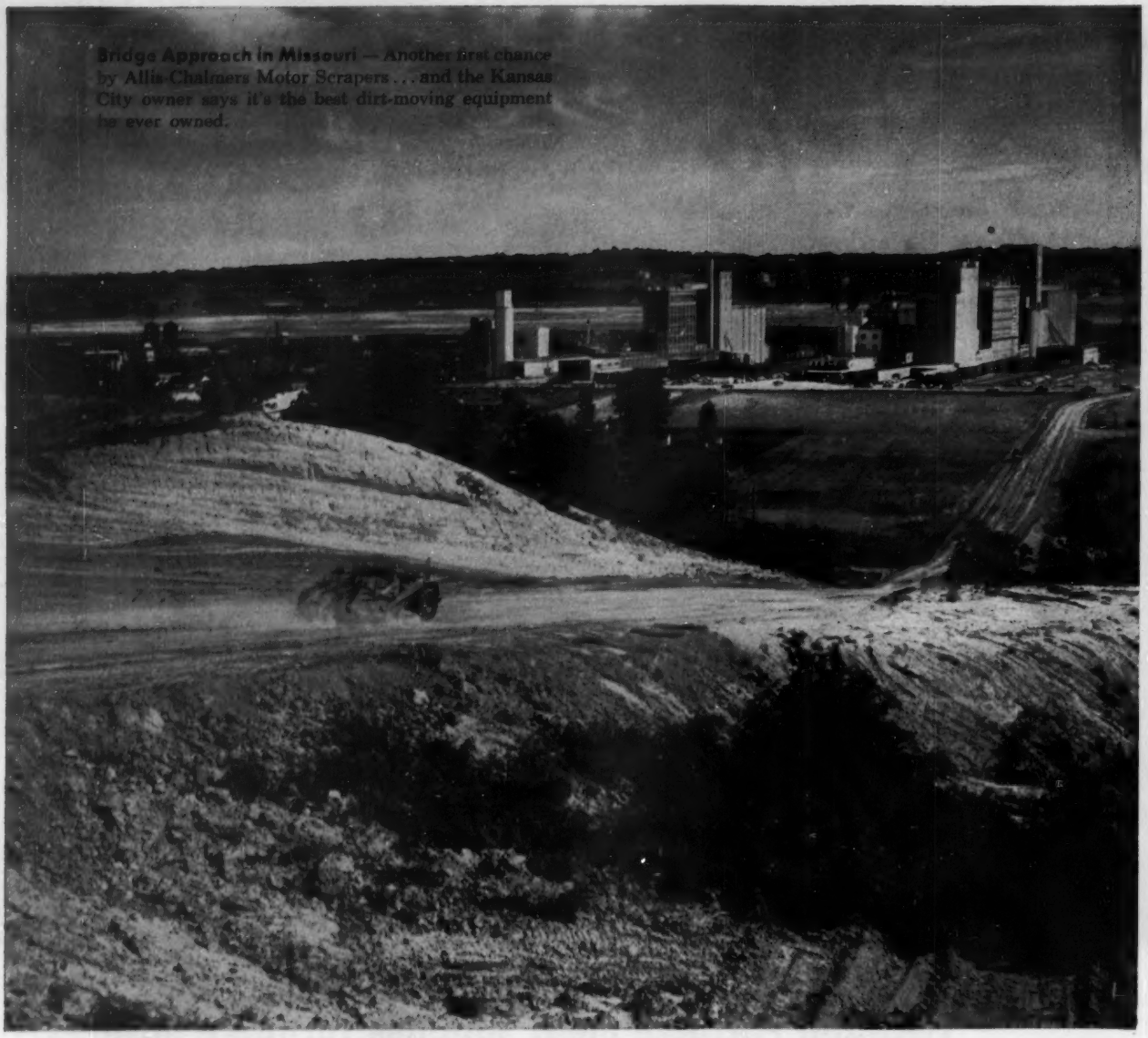
Two-Unit Portable Plant Supplies Turnpike Base

SANDSTONE—300 to 350 tons every hour—pours off the belt of this Pioneer portable crushing and screening plant into a Koehring Dumptor on its way to the Ohio Turnpike at South Amherst, Ohio. The two-unit portable plant has a No. 153PR primary 3042 jaw crusher behind a 42-in. by 14-ft apron feeder, capable of handling rock measuring up to 30x40 in.

The secondary, a No. 154V, is equipped with 54x24-in. twin rolls and a 4x12-ft, 3½-deck vibrating screen. The rolls handle a feed from the primary containing rock up to 7 in. when producing 3-in. minus. Primary and secondary each are powered by a 125-hp electric motor. Electrical energy comes from a 23,000-v line, stepped down to 2,300 v with a portable transformer that moves with the plant.

The dense sandstone shoveled into the apron feeder of the primary by a Link-Belt Speeder is being salvaged in a quarry from piles accumulated as long as 100 yr ago with pieces unsuited for sawing and manufacture into cut stone products. Highland Aggregates Co., Inc., of Louisville, Ky., owner of this Pioneer combination, is a supplier for the Turnpike on the property of Cleveland Quarries, located near the big road.

Flexibility of the two-unit portable made it possible to bring the plant to the piles of refuse stone, some as much as 60 ft high, and load directly into the plant—eliminating feeder trucks. Specifications call for a top size of 3 in., permitting 2 in., if necessary to obtain proper gradation. W. J. Gutermuth is in charge of operations for Highland Aggregates.



Bridge Approach in Missouri — Another first chance by Allis-Chalmers Motor Scrapers . . . and the Kansas City owner says it's the best dirt-moving equipment he ever owned.

Today's Contractors are Keen Judges of Equipment

On earth-moving jobs all over the country, design, performance and service features that were once taken for granted are now getting a careful look . . . because even one extra yard per load, one extra mph. on the haul road can make a big difference when it comes to staying within bidding estimates.

That's why you see Allis-Chalmers Motor Scrapers and Motor Wagons on more and more big construction projects like those illustrated here. Cost-conscious, profit-conscious contractors have analyzed them, used them and have satisfied themselves that Allis-Chalmers Motor Scrapers have what they need to help them win bids, stay on schedule and make a profit when they are through with the job.

If you have your sights set on some close-margin, hard-to-get business, we *know* it will pay you to go over *all* the facts with your nearby Allis-Chalmers dealer.

Housing Project in California — Here, six big TS-300's and their HD-20 partners team up at the Westlake job near San Francisco . . . for a contractor moving over 8,000,000 yards in the last five years.

Runway Extension in Tennessee — This TS-300 is the first Allis-Chalmers equipment this contractor has ever owned, but it earned a regular spot fast by high-balling capacity loads like this trip after trip.

Dam-Building in Illinois — and the fleet color is Persian Orange. The 176 hp. TS-200's and HD-20's load smoothly, efficiently . . . and the TS-200 is rolling fast toward the fill the instant they break contact.

Railroad Bed in Montana — These TS-300's (14-yd. struck capacity; 18-yd. heaped capacity) averaged 14 trips an hour, excavating grade for a five-track rail bed at the site of a new aluminum plant.

Jet Base in Jersey — Silt and sand make this a tough job . . . but the extra power of the TS-300's, plus the HD-20's ability to exert full power at creep speeds, paid off in big yardage.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Construction News in Pictures

MOUNTAIN PAVING — Hairpin turns and grades up to 14% were taken in stride recently when the W. H. Hinman Co., North Anson, Me., put an asphalt pavement on a 5½-mi road up to the top of Vermont's famed Mount Equinox. Hinman's Barber-Greene finisher placed two hot-mix asphalt cement courses, each 1½ in. thick, easily pushing loaded trucks ahead of it on all grades. As a precaution, ⅜-in. bolts were installed through the crawler treads when placing the surface course to get extra traction.

SOIL SOAKER — The Garden State Parkway down through New Jersey is a major earthmoving project. Construction Aggregates Corp., Chicago, wets down a section with a 4,000-gal tank strapped across the back of a scraper. A perforated pipe, slung transversely across the bottom of the rig and fed by gravity, does the sprinkling. —Bucky McDonnell photo

RED HOTS READY — Rivet heater is on the alert, ready to toss up another one to go into the extensive steel framework (by Bethlehem Steel) of Boston's new overhead arterial highway under construction to ease traffic flow through the busy city. This is scene looking toward Haymarket Square with Custom House Tower showing in the background—Wide World photo

INDOOR JOB — Foundation hole for a stamping press, 5 ft 8 in. deep, 10 ft 8 in. long and 9 ft 5 in. wide is dug under the ceiling of a factory building by Robert Patton in Detroit with his Sherman Power Digger, mounted on the back of a Ford tractor. After air tools had broken up reinforced concrete floor, digger removed rubble and dirt and loaded it into truck in less than 4 hr.

Cross Rolling*?
NOT when you use a Buffalo-Springfield 3-axle tandem!

YOU CAN MEET DENSITY AND SMOOTHNESS REQUIREMENTS IN FEWER PASSES WITHOUT CROSS ROLLING, CUT JOB TIME.

*** Rolling in one direction with conventional 2-axle tandems often fails to give proper levelling results. It can leave waves or bumps that have to be ironed-out by later cross-rolling or rolling on the diagonal. All too often, material *has already set* by the time cross-rolling is done. This can cause serious internal damage to the material, can make it deteriorate quickly under traffic. Most important of all, it costs you *extra job time*.**

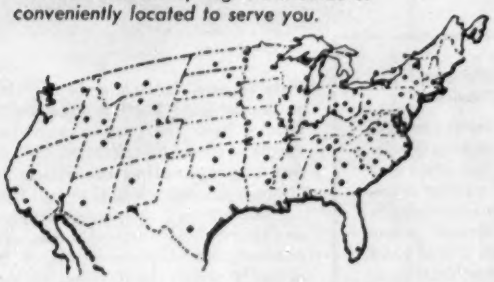
Walking Beam 3-Axle Tandems with Compaction Control completely eliminate cross-rolling, the *internal* damage to material it causes, and the extra job time it requires! You *finish* rolling material while it is pliant and workable. You can meet density and smoothness requirements in considerably less rolling time than required with 2-axle tandems!

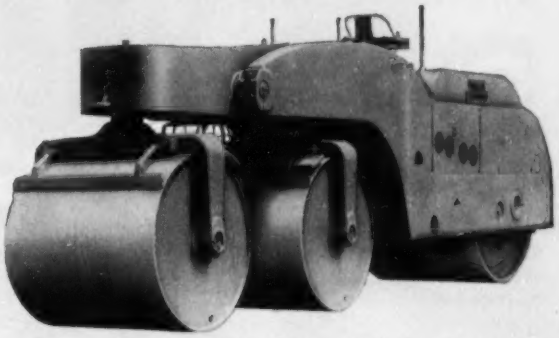
Facts from the field:

Contractors report averaging more than 60% higher tonnage compacted per day with 3-axle tandems than with 2-axle tandems doing similar work. Published records show 3-axle surface roughness indices are as much as 50% lower than state averages. And many states specify fewer rollers, less rolling time when you use Buffalo-Springfield 3-Axle Tandems!

Consider what this means to you in dollars and cents. Fewer passes, no cross-rolling whatsoever, fewer rollers to operate and maintain, lower capital investment. Jobs getting done faster and better than ever before. A real chance to cut costs and make money on those jobs you really want!
Write for Bulletin S-62-53.

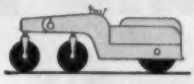
There's a Buffalo-Springfield Distributor conveniently located to serve you.





Buffalo-Springfield 3-axle tandem

This is Walking Beam Compaction Control:



1. Both guide rolls are suspended from a single rotating beam. When the beam is "semi-locked," the end guide roll can pivot above but not below its normal position.

2. When the first guide roll encounters a high spot in the fresh material, the Walking Beam rotates to permit the first guide roll to pass over the hump exerting only its normal pressure. This "prepares" the material for the high compaction of the center guide roll.

3. Then the center guide roll rises on the hump. The "semi-locked" Walking Beam causes the entire guide end of the roller to rise with the center roll. This lifts the end guide roll off the ground, transfers its weight, along with some of the weight of the *drive* roll. At this instant, the center roll exerts *almost 3 times its normal compaction.*

4. The drive roll exerts its normal compaction as it passes over. The Walking Beam can be used unlocked for rolling vertical curves and warped surfaces. Can also be used fully locked, if desired.

See your distributor for complete information or write —

Buffalo-Springfield Roller Co.

BUFFALO SPRINGFIELD
THE STANDARD OF COMPARISON
SPRINGFIELD, OHIO

THE LEADER IN ROAD ROLLER DESIGN AND MANUFACTURE.

We torture truck axles to

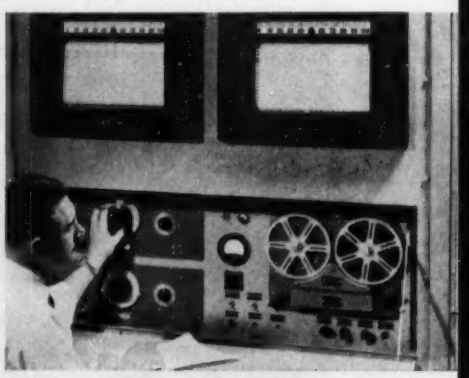
in the new Timken-Detroit indoor proving ground ...and only Timken has it!

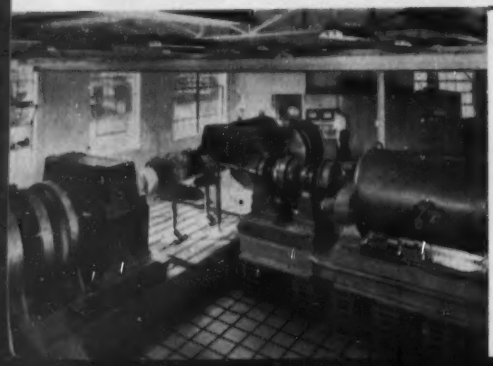
We shock-load, abuse, and torture them. Match every conceivable hauling condition. Then add a few brutal tricks of our own!

Why? So you'll know in advance, and *for sure*, that a Timken-Detroit axle can take the punishment it was designed for. More rugged, grueling punishment than any other trailer axle made!

To prove it, we capsuled a multi-thousand acre proving ground into one room. Here our engineers can put 50 years of experience in building axles for trucks, buses and trailers to work—subjecting axles and gearing *indoors*, to any *outdoor* operating condition.

Such exacting research pays off for you in: longer axle life; less maintenance, repairs and downtime; reduced operating expenses. This is why Timken-Detroit axles are preferred by manufacturers and operators everywhere.





How TDA proves axle quality in this "Torture Chamber"

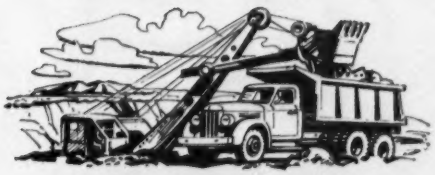
We pick one of our axles at random . . . then duplicate a hauling condition, hour after hour, day after day . . . simulating half a million miles of the toughest driving situations in just a few days. Or "invent" a test like going uphill with a full load from California to New York nonstop. There is no other axle testing like it in the world!

This is our "truck driver." He works in our "Torture Chamber." Above him are graphs showing speed and torque performance under any operating condition he chooses . . . soft ground at full load . . . mountains . . . express highways or side roads. With special dials, recorders and electronic devices, he actually *drives* the axle with scientific accuracy from his chair!

THREE TYPES: Hypoid-helical double-reduction, optional inter-axle differential. Worm drive, without inter-axle differential.

Hauling wet mix? You need Timken-Detroit axles—duplicates of axles that have been given the "works" in our indoor testing laboratory. Simulating the punishment the axle would get hitting a chuck hole with a capacity load every 4 seconds, 24 hours a day, month after month! And it's all done to save you money on maintenance and repairs—make you more money every load.

death



TIMKEN Detroit AXLES

TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN

The Accepted TDA Standard
TRADE MARK REGISTERED

"TORTURE-TESTED"
to Save Money on the Job

WORLD'S LARGEST MANUFACTURERS OF AXLES FOR TRUCKS, BUSES AND TRAILERS

For six-wheeler operation . . . the TDA Tandem Drive Rear Axle Unit

Now—the *lightest weight* tandem drive rear axle unit for heavy-duty motor trucks! And with these features, developed, introduced and pioneered by TDA: (1) Available in 3 types of final drives and 3 capacities. (2) Top-mounted straight-line final drive eliminates propeller shaft angularity. (3) Optional inter-axle differential . . . spur gear design, cab-controlled power-lockout. (4) Torsion flow axle shafts . . . guaranteed for 100,000 miles or three years, whichever occurs first. (5) Hot forged steel axle housing . . . guaranteed for the life of the vehicle. (6) Unit-mounted "P" series power brakes . . . for longer life, greater economy and efficiency. (7) Cradle ride spring suspension and paralleled torque rod system . . . maintain correct alignment and weight distribution regardless of driving and braking conditions. (8) Exclusive two-piece trunnion tube bracket speeds servicing. (9) Removable torque rod and spring guide brackets . . . for positive alignment, easier replacement. (10) Rubber torque rod bushings and rubber spring seat bushings . . . eliminate metal-to-metal contact. Require no lubrication.

Increase axle life with Genuine TDA Equipment Parts

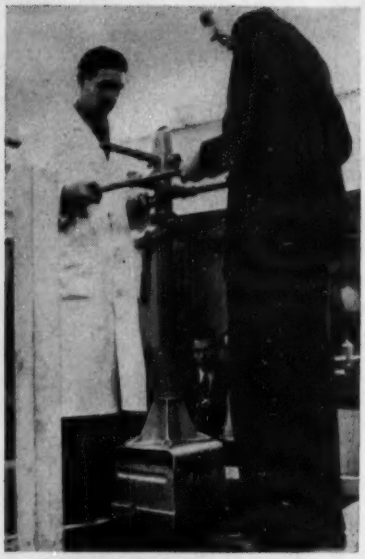
Take no chances with ordinary replacement parts. For sure, dependable factory-type jobs, look to genuine Timken-Detroit axle parts kits—identical to your axles' original equipment.

Each kit is *complete*—gives you everything you need—in one handy package. Gaskets and shim parts, brake liners, steering knuckles, differential gears—for every size of brake and axle. Order by number from your dealer. Cut labor and adjustment costs. Get trucks back on the road quicker!

Plant at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York • Ashtabula, Kenton and Newark, Ohio • New Castle, Pennsylvania

CONSTRUCTION 'ROUND THE WORLD

BRITISH STRAIGHTLINE LOADER — Merton Overloader demonstrates its usefulness as it dumps a bucket-load of crushed rock backward into a truck. The ½-yd bucket is brought from tipping position back to loading position in 15 sec, and it is powered through cables and a winch driven from the front end of the engine—making control independent of tractor travel. Proper balancing on the Fordson Major diesel tractor makes counterweights unnecessary and the guide rails impart a crowding action, says the maker.



SQUARE-HOLER — Also British is this square hole digger with which two men loosen and remove the ground from a neat excavation as they control its dimensions. Diggers come in two sizes: 12 in. and 18 in. There also is a 6-in., one-man size.

British Government photos

ROLLS ROYCE IN CONSTRUCTION — The name Rolls Royce is synonymous with fine automobiles by English craftsmen. Now this famous company is making an engine for Britain's first heavy crawler tractor, the V. R. 180. The engine is a supercharged diesel, powers a tractor unit built by Vickers Armstrong. Here it is pulling a 14-yd Onions scraper on an earthmoving job during restoration work in connection with open-pit iron ore mining in England. Scraper resembles American types, but tractor features many differences. Note particularly the track roller arrangement and design of the cable control.

30% to 40% faster drilling: D. C. Toye Company's 7500 cu. yd. foundation excavation for Willamette View Manor near Milwaukie, Oregon, included 3500 yds. of basalt rock. Blasts had to be kept small because of nearby hospital. 6′ to 8′ holes were drilled on 4′ to 6′ centers with a 55 lb. sinker. *By using a Jaeger Model 125 compressor, instead of a 105, drilling was completed 30% to 40% faster.*

80 yds. of rock per hour per drill: With 10 wagon drills, H. W. Holt & Son averaged 16,000 cu. yds. of rock excavation per 20-hour day on West Virginia Turnpike. A "600" compressor behind each pair of drills kept them at the required top speed. No excavating contractor, today, would buy a 500 ft. compressor for such work. *The other "old standard" sizes of 60, 105, 160, 210 and 315 ft. are on the way out for similar reasons.*

To power your tools at full efficiency

Jaeger gives you 15% to 25% more air

The difference between a "new standard" Jaeger and others is 15% to 25% more air for your money — 75 ft. instead of 60, 125 ft. instead of 105, and larger sizes comparable.

On the job that additional air often means full pressure instead of mere 70 lbs. pressure at the tools, directly increasing work output 30% to 40%.

Jaeger "Air Plus" compressors have been delivering these higher volumes for years, at moderate temperatures, with notably low fuel consumption, and we believe, the lowest cost of upkeep of any compressors.

Now, when cost-savings are so important, ask your Jaeger distributor to show what he can save you on air and air tool operation — or send for Catalog JC-1.

THE JAEGER MACHINE COMPANY

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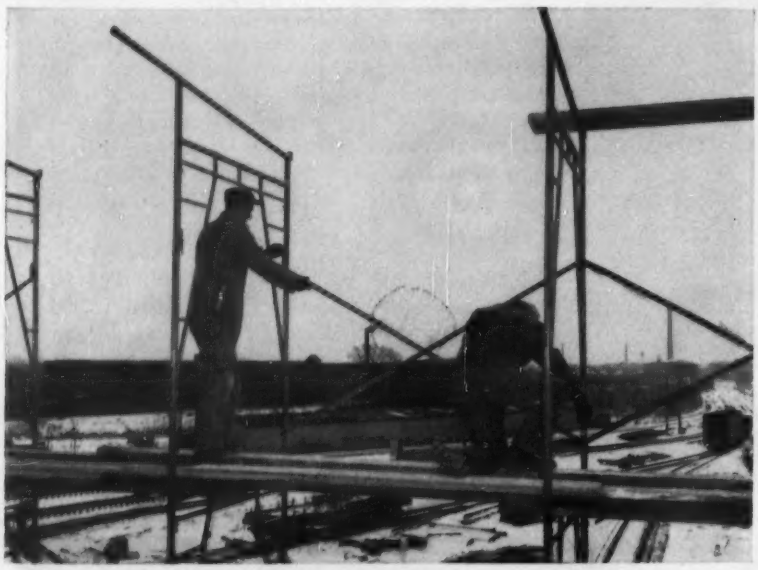
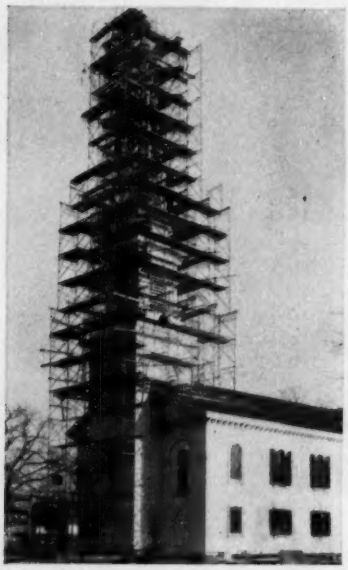
(Advertisement)

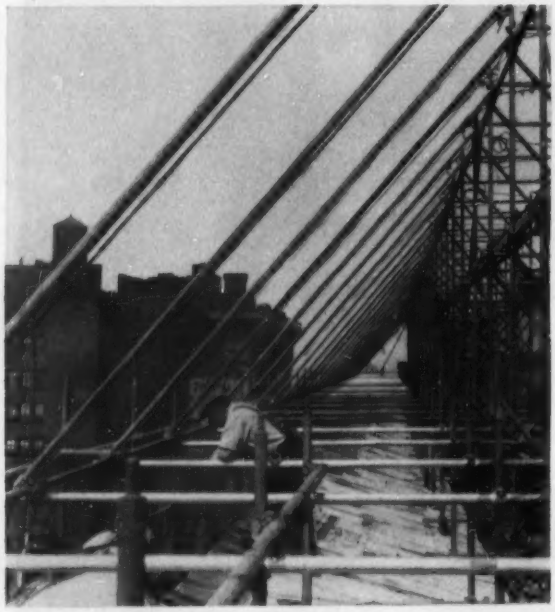
Scaffolding News in Pictures . . .



TRACKS BELOW — Crossbraces are secured to frames by fast, gravity-action "SlideLoks" as erectors put up "Trouble Saver"® Sectional Steel Scaffolding for masonry work on the New York Central's new diesel repair shops in Buffalo, N. Y. Seigfried Construction Co. rented 300 6'6" "Trouble Saver" frames to speed this job. Overhead protection attachments are used so that scaffold could be covered and heated.

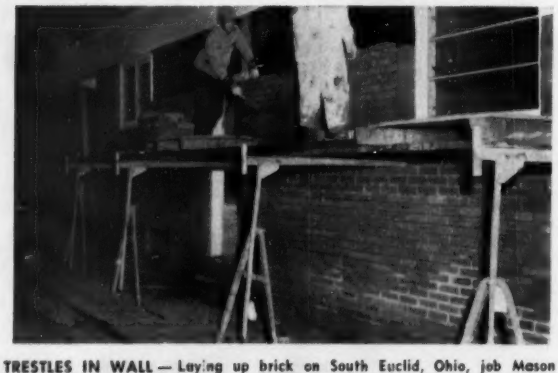


TAILORED TO FIT — This 160 ft. high, 260-frame "Trouble Saver" Scaffold puts men close to repair work on First Congregational Church, West Haven, Conn. Patterson Construction Co., New Haven, is the contractor.



BUILT FROM THE TOP DOWN — For cornice removal on an 18-story building at 30 Union Square West, New York, J. H. Taylor Construction Co. uses this outrigger "TubeLox"® Scaffold, cantilevered 6 ft. beyond the 6 ft. high parapet wall to solve the problem. Steel cables are anchored to the roof, then run up over the "TubeLox" complex "towers" at right which support a two-level hanging "TubeLox" Scaffold below the cornice.

BOTH WAYS AT ONCE — Every part of the job is easily reached by the 160 masons on the Pruitt Housing Project in St. Louis, Mo. 276 5-ft. wide "Gold Medal" Scaffolding Machines are used by I. E. Millstone, general contractor, to provide quick adjustment to proper working heights as the job progresses. Overhead protection attachments support planking.



TRESTLES IN WALL — Laying up brick on South Euclid, Ohio, job Mason Contractor L. Hubbard uses new "Trouble Saver" Adjustable 5 ft. wide Putlog Trestles. Patent Scaffolding Co. offers a complete engineering service. To buy or rent PS Scaffolding, see the Yellow Pages in your phone book for the nearest PS Co. office or representative handling "Gold Medal" Scaffolds.

FOR GREATER SAFETY . . . EFFICIENCY . . . ECONOMY

THE PATENT SCAFFOLDING CO., INC.

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The Wonder Grease for Concrete Forms

REGARDLESS of whether you use steel or wooden forms for concrete work — you can apply Globe Form Grease by spray, brush, or swab. This time-tested paste emulsion will reduce peeling and pitting to a minimum when forms are removed, and practically eliminate patching.

Due to its special adhering qualities, Globe Form Grease requires only a thin coating for utmost effectiveness. In fact, one gallon adequately covers approximately 200 square feet! And in addition — Globe Form is stainless, leaves a whiter smoother surface, and eliminates the need for painting.

Why not write for full particulars today? Once you use Globe Form Grease, you'll understand why engineers and contractors hail it as the "wonder grease" for concrete forms.

OILS and GREASES
for every purpose
DIESEL
STEAM
AUTOMOTIVE

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(Advertisement)

On the Kansas Citys Flood Control Project construction men agree

Rarely is there such complete agreement on one make of equipment among owners, superintendents and operators as you'll find on the huge Kansas Citys Project. Caterpillar* track-type and wheel-type Tractors, Motor Graders, Diesel Engines, Electric Sets, Bulldozers and Scrapers all share the praise of the men doing this big job, supervised by the Kansas City District, Corps of Engineers, U. S. Army. Some of them are quoted here.

CAT* NO. 12 MOTOR GRADER does quality work in tough, sticky soil on the new levee in Kansas City, Kans. Explains M. C. Green, general superintendent of Storms and Frew Construction Co.: *"We favor Cat machines because they take more abuse than other makes but still are easier to operate."*

A D13000 DRIVES TOWBOAT *JOHN THOMAS*, owned by Massman Construction Co. The boat moves and holds in place barges with 190 tons of rock to fill tow trench in the Kaw at Turner, Kans. Operator Alan Anderson says: *"The D13000 has all the power I need and it's not a noisy engine. I have to live with it, so this means a lot to me."*

A CATERPILLAR TEAM PRODUCES for Bales & Kite at the mouth of the Kaw. The speedy DW10 with a No. 15 Scraper dumps sand where a dragline powered by a D13000 picks it up and redistributes it. It is used on the levee face to form a foundation for rock. Production: 1000 cu. yd. daily. Says co-owner M. B. Kite: *"I know the best all-around machines are Cat machines. They have longer life, less down time and my men like to operate them better."*

*Both Cat and Caterpillar are registered trademarks—®

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A.

MAY, 1954 • VOLUME 36 • NUMBER 5

HAROLD W. RICHARDSON, Editor

CONSTRUCTION METHODS AND EQUIPMENT

The Gates of Hell Stand Ajar

WHAT NOW, little man? Now that you've pried open the Gates of Hell with your hydrogen bomb and looked inside, what's next? Do the fire and brimstone therein mesmerize you into a lust for blood and power that eventually will wipe out the very civilization that produced this monster? Or do you shudder from that terrible possibility and turn away from the fiery gates with a determination to save mankind instead of destroy it?

It matters not, little man, the color of your political creed, be it red or white. It matters not the country from which you stem. It matters not if you jarred those Gates of Hell open in an offensive or defensive mood. It matters not who next produces a bigger and more destructive weapon—the other fellow will come right back with one even more terrible in its consequences.

All that matters is for man to come to his senses and determine to live one with another around the earth. All that matters is for man's political and human wisdom to exceed his scientific knowledge. All that matters is for man to turn to God and forsake the Devil that seeks to destroy him.

The first two atom bombs dropped on Japan nearly 9 years ago were terrible enough. At Nagasaki we personally saw what atom's might unleashed could do to vast areas of structures, steel, brick, tile and concrete — and to human flesh. Yet the Nagasaki and Hiroshima bombs were crude by today's standards. They were piddling little things whose destructive force was measured by mere kilotons—thousands of tons—of equivalent TNT.

Good-bye atomic warfare. Hello, thermo-nuclear age!

Now they're rating nuclear explosions by the megatons — millions of tons of TNT equivalent. The American public has just been given a frightening dose of lurid descriptions and pictures of the Eniwetok blast of 18 months ago — rated as some 5 megatons. An island disappeared in the blast, a crater 1½ mi wide and 175 ft deep appeared. Newspapers have been superimposing that destruction upon maps of New York, Washington and other big cities.

But the 1952 blast is already passe—the last March shows are rated twice, three times as powerful, 8, 10, or 15 megatons.

What's the difference—10, 15, 25, or even 40 or 50 megatons, such as they're now hinting as possible? Already we know a hydrogen bomb can wipe out any of our largest cities and environs. Its fireball alone can vaporize every bit of substance, animal or mineral, over a wide area in a flash. There's no defense, no hope for the people against such a catastrophe.

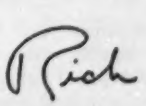
Already our previous conceptions of civil dedefense are worthless. They're now talking about hopes of a 2-hr warning—but it will take 2 years to accomplish—and then we can't count on it. "Take to the hills" is the only defense measure now recommended for big cities. How utterly foolish, how inadequate, how hopeless! It takes 2 hr to get out of any big city today on a normal Friday afternoon — without being engulfed in panic.

Our construction forces were pretty well lined up to assist in civil defense against the A-bomb. But now what? Shelters are useless; rescue of survivors from stricken areas will be equally useless—there will be no survivors except in the outer fringes.

These words are not written in fear or alarm—they are merely recognition of the inevitable if and when World War III erupts. Construction stands ready to do what it can. From now on construction men should take the lead in civil defense. But, at best, civil defense in thermo-nuclear warfare will be only mopping up after the carnage.

Better by far would be leaders of men throughout the world—from all nations and all races—to sit down together and determine that mankind and its civilization shall not perish from the face of the earth.

Little man, what now that you have pried open the Gates of Hell? Do you turn back into World Peace, or do you blindly, stubbornly and arrogantly slide into the consuming fires and pull civilization along with you?



Dual-Purpose Piles Cut Building Costs

BY HENRY T. PEREZ
Senior Associate Editor

AN UNUSUAL and economical foundation technique—holding the sides of building excavations with cast-in-place concrete piling—has been developed in Houston. Uncased piles are poured in drilled holes at close intervals all along the building line to act as soldiers. Later they become part of the permanent basement wall, whose poured section thus can be made thinner than usual. C. A. Bullen, one of the original developers of the scheme and president of Manhattan Construction Co. of Texas, estimates that over-all completed wall cost is only 60 to 85% of what it would be with steel sheeting.

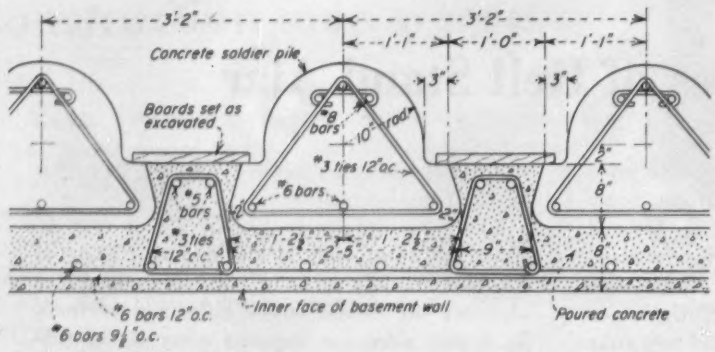
First operation for this method of ground support is to drill the soldier-pile holes, usually 20 in. in dia and on about 3-ft centers, with truck-mounted rotary auger-type rigs. Depth of hole below basement floor is governed by such things as soil pressure and whether the piles are to cantilever or are to be braced. When a hole has been drilled to final grade, a special broaching tool is introduced into it to enlarge and flatten the part facing the future excavation.

Ears Shave Soil

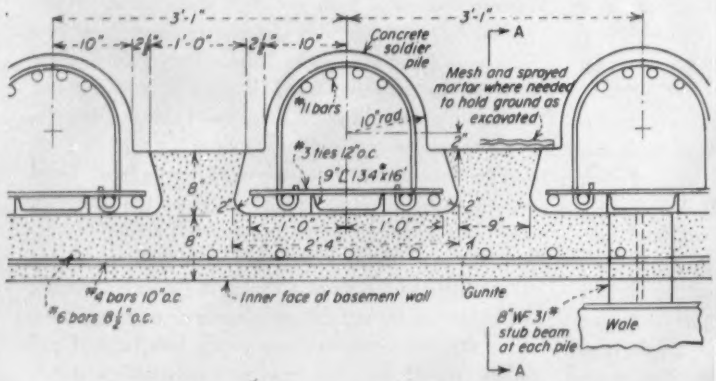
The broaching tool consists of a 6-cu ft cylindrical bucket the same diameter as the drilled hole, with two flared cutting ears extending out the side. As the broach is forced down inside the circular hole, the ears shave off soil from the two front corners to make a widened face. Spoil falls into the bucket section, and the tool is emptied periodically through a flap gate after being removed from the hole.

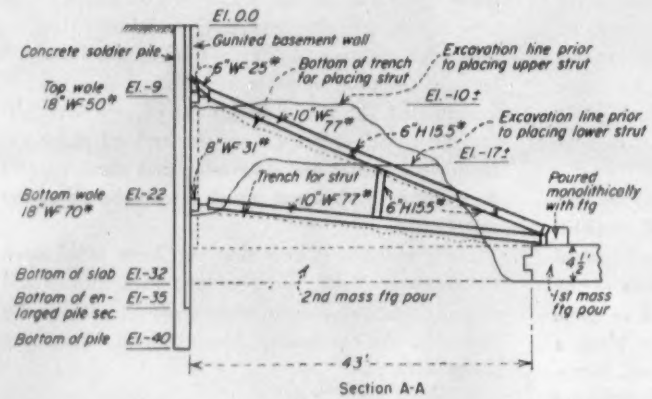
A suitable prefabricated reinforcing cage next is placed in the drilled and broached hole, and the pile is concreted. The resulting soldier pile is 20 in. thick (front to back) and some 2¼ to 2½ ft wide at the front face. This enlarged portion, 8 in. thick, acts as a continuous seat along two sides of the pile behind which horizontal sheeting can be set to hold the ground between adjacent units. Its shape also is such that it will help key the poured part of the basement wall to the piles when it is built later.

When the line of piling is com-

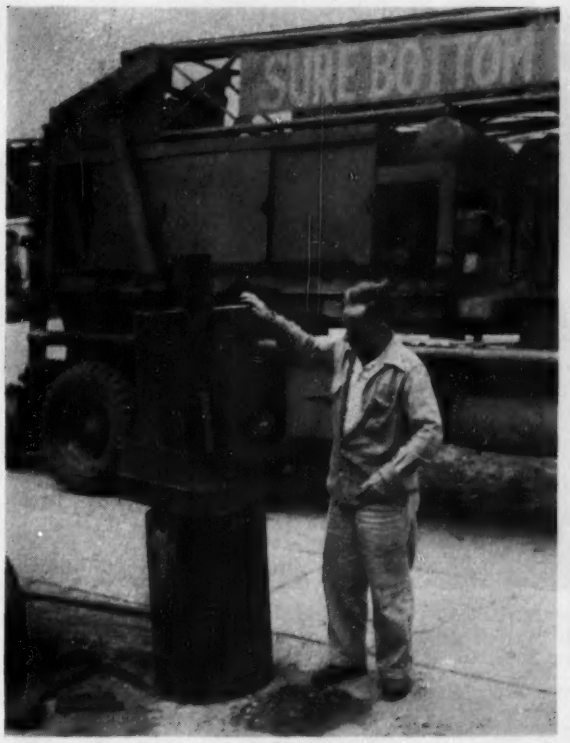


Typical basement wall for new Houston Club Bldg. where line of piles is unbraced and cantilevers 12 ft above bottom of excavation. Houston engineer Robert J. Cummins, one of pioneers in this type of construction, is consultant on job. Manhattan Construction Co. of Texas is general contractor.

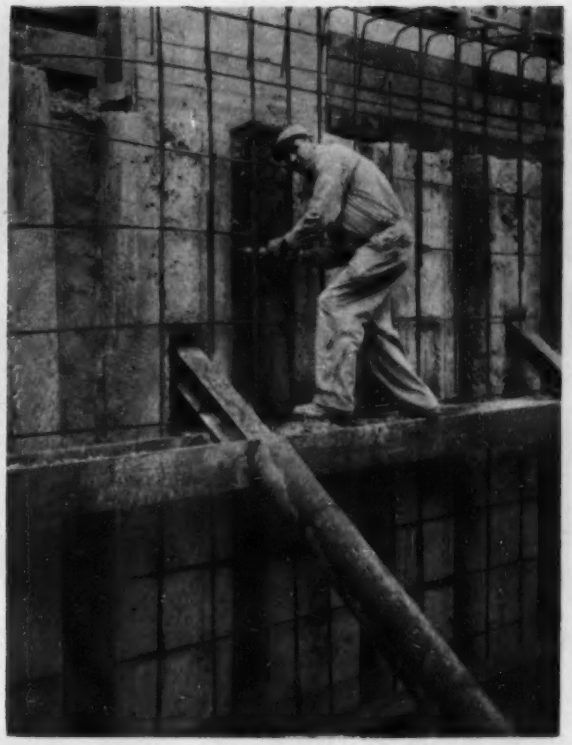




Basement wall for deep section of South Texas National Bank Bldg., Houston, where wall is braced by two sets of wales and rakers. Architect Kenneth Franzheim designed it, Reinhold P. Fench was structural engineer, and Manhattan Construction Co. of Texas is general contractor.



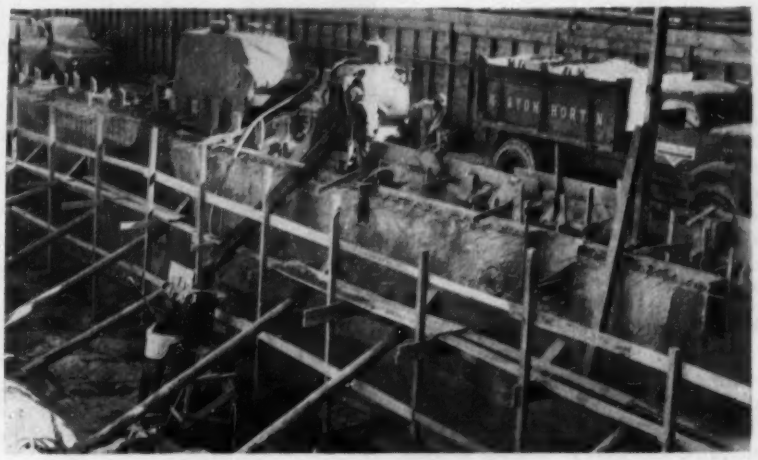
BROACHING TOOL that enlarges one side of drilled hole for concrete soldier pile is checked by Lee R. Ashmore, Sure Bottom Foundation Co.'s president, who designed it. Drill rig is at rear.



REINFORCING STEEL for basement wall will be tied to pin driven into concrete pile by Remington stud gun. Note sprayed mortar holding top dirt between piles, while clay below stands up alone.

plete, the building is excavated. Horizontal wood sheeting is usually placed between piles as the cut deepens. However, in certain cohesive soils this is unnecessary because the piles are so close together: There's only a maximum 1-ft space between projecting ears of adjacent piles. Where required, the line of piles is braced by wales and rakers as for any other method of ground support.

The soldier piles usually are incorporated into the basement wall when the latter is poured. For this, reinforcing steel is placed in the key-shaped space between piles and tied to the bars that reinforce the inner face of the wall. The 8-in. thickness of pile (the eared section) thus becomes an integral part of the basement wall, with the rest of the pile as an exterior pilaster.



GUNITE SETUP for wall construction is on two levels. Behind street barricades are Gyroflo 600-ft compressor and CMC 14-S mixer that feed Cement Gun machine in the hole.

Latest application of the foregoing foundation scheme was for the 21-story South Texas National Bank & Continental Oil Co. Building in Houston, for which Manhattan is general contractor. Ground at the site was a stiff Beaumont clay overlain with 6 ft of dirt. In this, nearly 300 concrete soldier piles were put down to hold all sides of a 140x280-ft excavation that went as deep as 32 ft below grade.

Holes for the 20-in. piles were drilled to some 6 to 8 ft below footing and basement slab bottom, and generally were either 31 or 40 ft deep. Immediately after broaching and reinforcing steel placement, they were filled with 3,000-psi concrete. To prevent disturbance to a freshly poured pile, it was necessary to alternate a minimum of every third hole on three street sides of the lot and every fifth hole on the remaining side, where another structure was immediately adjacent. Also, a minimum of one

BASEMENT WALL is built up by guniting between and over soldier piles. From face of pile, wall is 6 or 8 in. thick, with extra 8 in. behind face. Basement walls call for 500 cu yd of gunite.

BACKFILL IS SPREAD by International TD-9 bulldozer to bring area to basement grade after footings are poured. Fill comes from deep cut in background, heavily braced to hold adjacent building.

day had to elapse after pouring one pile before drilling the hole alongside.

The piles went in quite rapidly. Each of two drill rigs put down eight 31-ft piles or six 40-ft piles per 8-hr day.

Within the pile-protected enclosure, general excavation with a dragline proceeded to El –10 (ground surface was 0.0). This allowed a continuous 16- or 18-in. WF beam to be placed as a horizontal wale at El –9. Stub beams, welded between the wale and short length of steel channel previously placed with the pile reinforcing, kept the wale clear of the basement wall built later.

Mesh Holds Dirt

During these and subsequent operations, ground between the piles stood up well—only the top 6-ft layer of dirt above the clay needed support, and that primarily to prevent rain wash. Rather than hold this dirt with horizontal sheeting, Manhattan placed a 2x2 mesh behind the pile ears in that area and applied a 1½-in. coating of pneumatic mortar with a small Bondactor. The clay stood up by itself throughout the job.

Meanwhile, excavation continued to El –32 in the center of the lot to prepare for a 4½-ft thick mass footing there. Another machine dug out for individual interior footings throughout the area. When these footings had been concreted,

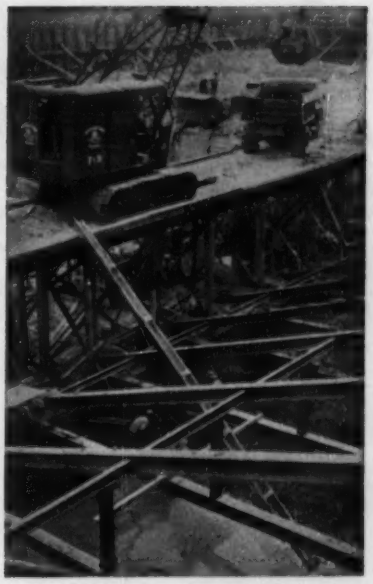
CONSTRUCTION TRESTLE spans deep sub-basement section, rests on completed half of thick mass footing. P&H ¾-yd clamshell on trestle and Lima Paymaster on bank excavate for rest of footing, loading spoil into Ford trucks. Concrete trucks also will ride on trestle.

they were used as kickers to take reactions of raker braces to the wale. The rakers, either 10-in. WF beams or 8-in. heavy pipe, and generally at every third pile, were set in narrow trenches dug through the not-yet-excavated berms. Bracing later was salvaged after basement and first-floor slabs were poured.

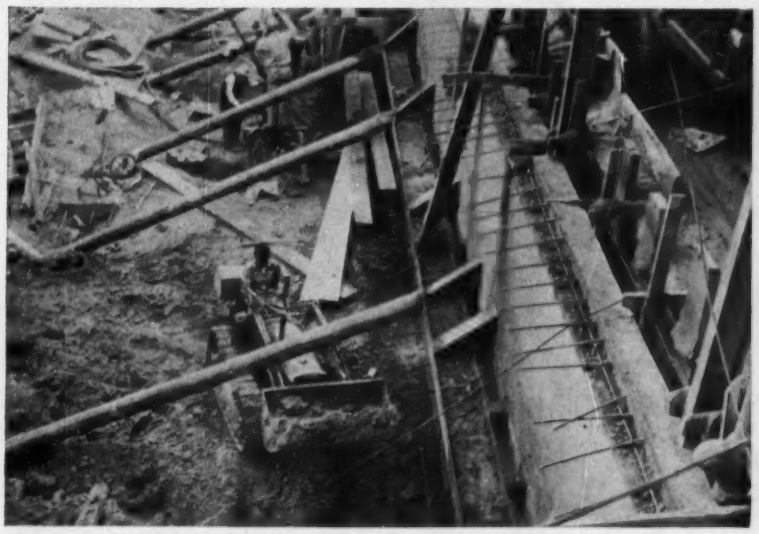
One braced wale was sufficient to hold three sides of the hole while excavation was completed around the edges. The fourth side, where the cut was to be 32 ft deep and where the bank was surcharged with an adjacent building, required a second 18-in. WF wale at El –22. Like the upper wale, this one was braced to an interior footing by struts installed in narrow trenches in the berm.

Struts from the double-waled line of piles reacted against the large 4½- ft thick mass footing. This footing, which was also the

EXCAVATION in spots not easily accessible to clamshell is speeded by digging with Cleco clay spades fed by Schramm 210-ft compressor. In this deep section, two levels of bracing hold piles.



RAKER BRACES (right) react against mass footing. With exception of horizontal strut between upper rakers, which is bolted for temporary removal to expedite clamshell digging, bracing is all welded.



CLOSE-QUARTER WORK around completed basement wall is handled by Oliver OC-3 tractor with Ware front-end loader that is small enough to duck under bracing and spread backfill for basement slab. All bracing will be salvaged later, after first-floor slab is poured.

floor of a sub-basement, covered more than half the width of the lot and was to extend over to the piles at the deep section. It was concreted in two pours. The interior half of the slab was poured first, and it was to this that the rakers were braced.

Also on this first slab pour, Manhattan erected a steel trestle from which a ¾-yd clamshell crane could operate to remove the berm and complete the excavation for the rest of the mass footing. Without a trestle, the machine would have had to work from the low level. And this would have confined the job excessively because of the necessity for leaving a long and steep earth ramp for central access. As it worked out, a truck hauling spoil from the clamshell could just run around at one level and dump the material to backfill isolated footings.

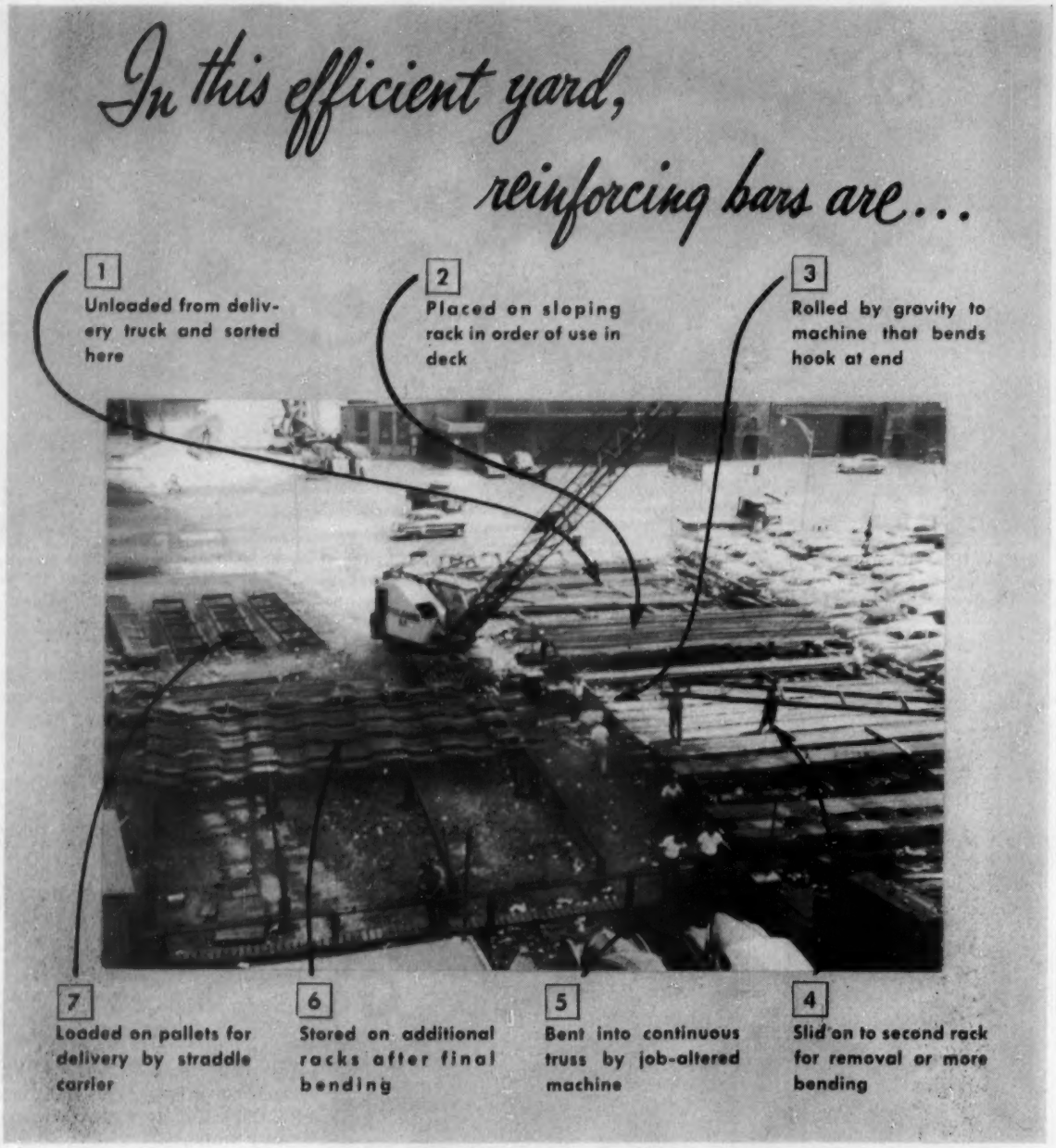
The trestle also proved a handy platform for ready-mix trucks. They traveled on it to deliver concrete for the rest of the slab and sub-basement wall pours.

While this work continued in the center of the lot, the exterior basement wall was built. It extended 6 in. beyond the face of the soldier piles in the shallow sections and 8 in. in the deep area. For the first time on this type of job, the wall was gunited rather than poured. And total thickness of gunite was as much as 16 in. in the sections between piles.

In preparation for guniting, steel studs were driven explosively into the concrete soldiers as anchors for reinforcing bars. Vertical bars were No. 6 on 8½- or 12-in. centers (for thick and thin walls, respectively) while horizontal bars were No. 4 on 10- or 16-in. centers. When these had been tied to the studs, a 1:4½ gunite mix was blown on to cover the reinforcing steel to a depth of 1½-in. A ½-in. finish coat was applied 24 hr later. Guniting progress was 1,000 sq ft of completed wall per 8-hr day.

For Manhattan Construction Co. of Texas, Houston general contractor, William Vaughn is general superintendent and J. M. Childs is job superintendent on the South Texas Bank-Continental Oil job. Sure Bottom Foundation Co., developer of the pile, drilled and broached the holes for the soldiers. Texas Guniting Corp. built up the basement walls.

In this efficient yard, reinforcing bars are...


1
Unloaded from delivery truck and sorted here
2
Placed on sloping rack in order of use in deck
3
Rolled by gravity to machine that bends hook at end
7
Loaded on pallets for delivery by straddle carrier
6
Stored on additional racks after final bending
5
Bent into continuous truss by job-altered machine
4
Slid on to second rack for removal or more bending

IN SOME PARTS OF THE COUNTRY, reinforcing steel must be bent on the job. New York City is one such place. So when Fehlhaber Corp. had to bend 2,000 tons for the East Side Elevated Highway on which it was general contractor (CM&E, Jan, p. 82) it set up a job yard to turn out the tonnage fast, yet economically.

In it, a crew of just nine men hooked and bent better than 2 tons of ⅝-in. reinforcing steel per hr. And a goodly number of the bars were 40-ft lengths that required 13 double bends each.

The highway's 75x7,600-ft heavily reinforced concrete deck called for ⅝-in. transverse bars on 10-in. centers in a top layer and on 5-in. centers in a bottom layer. All bars were to be hooked at one end. In addition, alternate bottom bars were to be bent up (or "trussed") over intermediate and end supports to take negative moment. This last requirement alone meant that some 312,000 double bends had to be made.

To hook and bend all bars, Fehlhaber's general lather foreman George Bouchey laid out a compact yard through which the reinforcing steel moved from operation to operation in an orderly and efficient fashion (picture above). A single truck crane spotted near the center was able to serve all parts of the yard without moving.

The reinforcing bars, supplied by Bethlehem Steel Co., were unloaded and sorted in one corner. Placed on an elevated sloping rack made of salvaged steel curbing, they rolled by gravity to an Alamo rotary bending machine for hooking. The hooked bars then moved to a second rack. Reinforcing that required no further processing remained in temporary storage here, but bars that were to

REINFORCING BAR moves along steel bench as its truss bends are put in by altered rotary bender. Movable strips clamped to bench show correct bend spacing for non-typical bars; permanent marks (short raised welds on bench top) give spacing for typical bars.

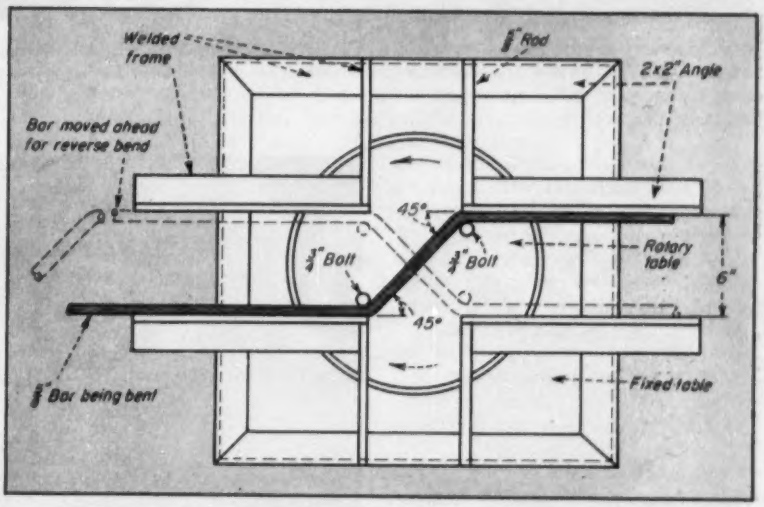
be both hooked and trussed continued on to a second Alamo machine that added the truss bends.

Bouchey adapted this machine to make each of the double bends in one motion. He devised a welded frame to fit over the fixed part of the table top (see sketch) to back-up the bars and halt the operation when the correct 45-deg bends had been made. He also replaced the standard bending pin with twin ¾-in. bolts. These were set in the rotary table and spaced so that both top and bottom bends would be made simultaneously when the table was turned.

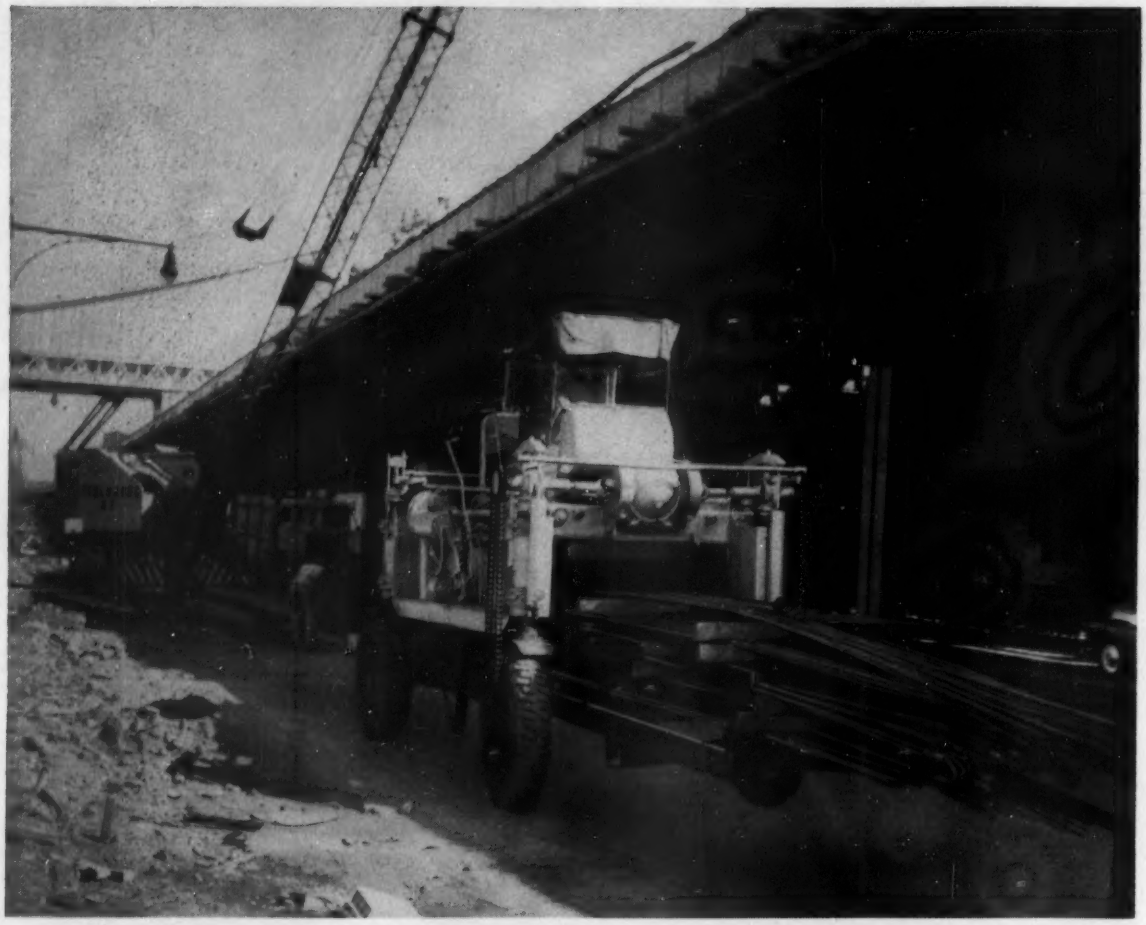
When one double bend had been made, the bar was merely slid along a run-out bench to a spacing mark. Then the rotary table was turned in the opposite direction to put in the matching reverse double bend. After all its truss bends had been made, the bar was moved to a storage rack alongside.

Readied bars were moved from the storage racks in groups of 50 with a simple rectangular steel frame, or strongback, having U-hoops extending down from the long sides at various intervals. A Link-Belt Speeder truck crane lowered the frame over a group of reinforcing on the rack, and lengths of pipe were threaded through the frame's matching pairs of U-hoops. Thus, when the crane hoisted the frame, the bars were lifted in a flat layer resting on the pipes beneath the frame. There was no tendency for the group of bars to squeeze into a bundle, as with chokers. Consequently, the bars never became tangled to make later handling difficult.

The bars were placed on any



BACK-UP FRAME and twin ¾-in. bolts added to Alamo rotary bending machine enable it to make top and bottom bends simultaneously for truss bar. When one set of bends has been put in, bar is slid along and rotary table is reversed to make matching opposite bends.



REINFORCING IS MOVED on pallet by Ross straddle carrier from bending yard to Link-Belt Speeder truck crane that raises it to highway deck. Blocking separates types of bars. Earlier in job, same Ross carrier moved steel foundation piles from yard to driver.

one of five steel pallets, in layers of 50 bars each and with blocking between layers, in the same sequence they were to be used. A straddle-type Ross carrier moved loaded pallets to the ground-level street near point of placement. When all pallets had been spotted, the truck crane moved out of the yard with its lifting frame and transferred each layer of reinforcing to the elevated highway deck.

Fehlhaber's reinforcing yard processed the bars fast: An average of 180 of the 40-ft truss bars and 500 to 600 straight hooked bars was turned out in a 7-hr day. It also was efficient: Total yard crew was only nine, plus crane and carrier operator. The nine: one foreman and two laborers sorting and handling, two men bending hooks, three men bending trusses, and one general foreman. General foreman was George R. Bouchey, and yard foreman was his brother John.

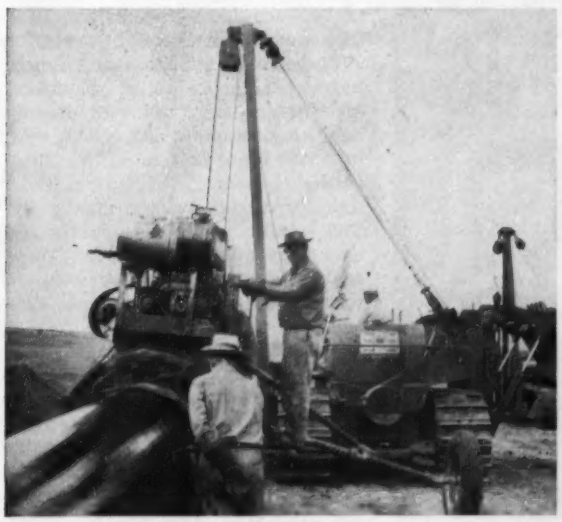
BARS ARE HANDLED in flat layers resting on transverse pipes slipped through U-hoops extending down from a steel-frame strongback. Thus the bars don't bunch up or get tangled.

OIL TRAP is a section attached below the line to catch fluids where they can be pumped out safely and separated from the gas. Ditch was excavated 42 in. wide and about 6 ft. deep by trenching machines. Drag bucket scooped out extra pockets.

Interesting Techniques in Pipelining

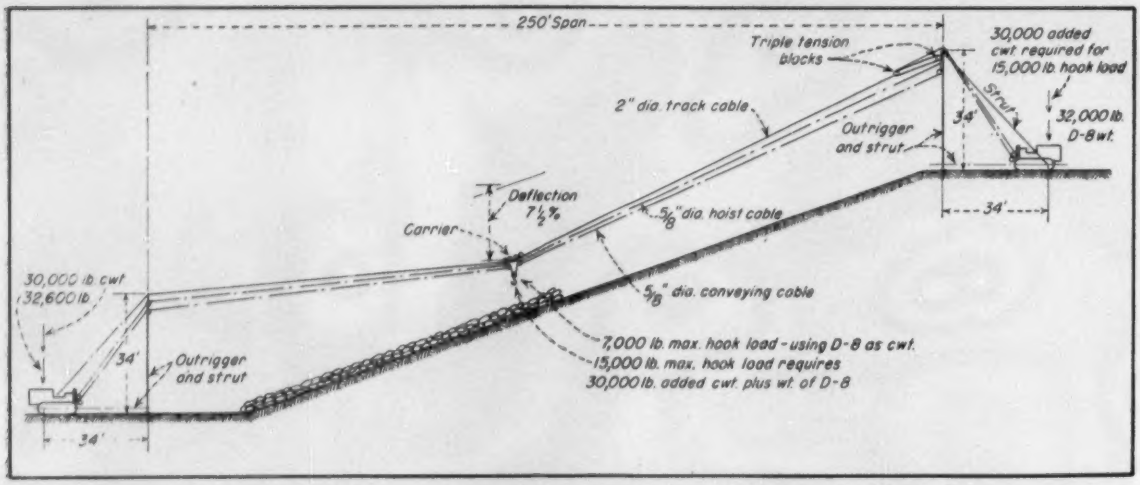
PIPELINES for natural gas account for a large volume in construction work and only the more spectacular installations make the headlines. Yet interesting techniques employed in normal pipelining make good reading. These pictures, supplied by Nebraska Tractor & Equipment Co., Omaha, show several operations by Lone Star Constructors, Dallas, while putting down 34 mi of 30-in. pipe.

On hot days, long sections of prepared pipe are lowered into the trench and covered at 4 o'clock in the morning after the metal has cooled, to avoid critical contraction underground.



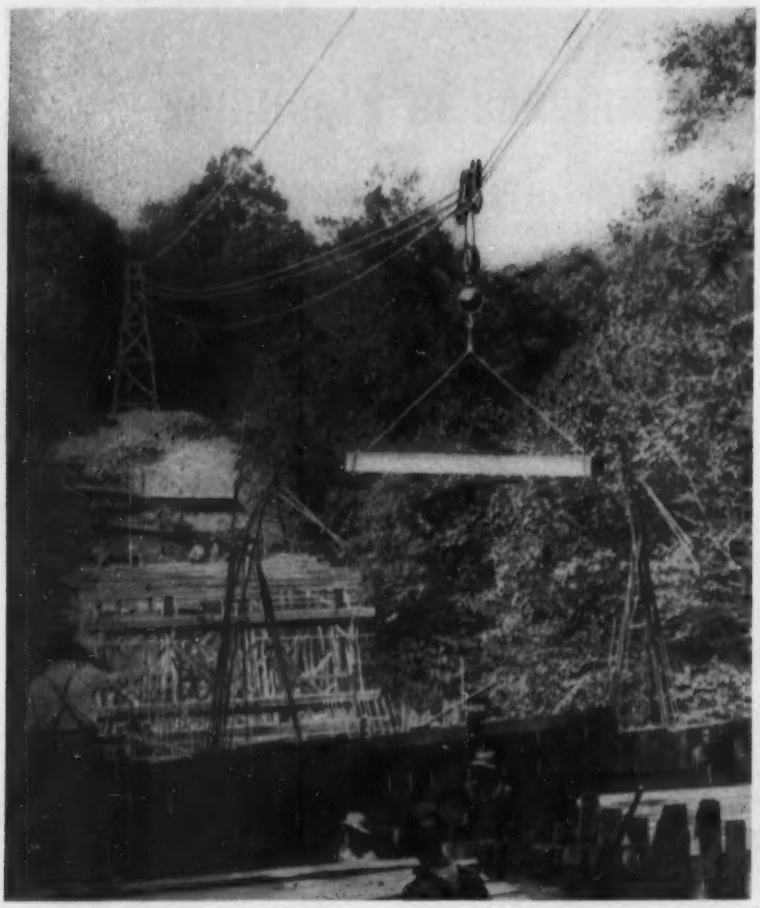
CLEANING AND PRIMING MACHINE, a Perrault, scours all rust and dirt from pipe and automatically applies a thin layer of enamel to protect surface until final wrapping and laying in is done.

BORING UNDER HIGHWAY is done with a Crose boring machine that turns an auger inside a 36-in. dia casing and pushes it through as auger advances. Gas line then is inserted in casing.



PORTABLE CABLEWAY, strung between crawler tractor-mounted booms, served one contractor well when placing a rock mat on the slope of a river bank. Extra counterweights were needed for heavy hook loads, but tautline could be moved with ease.

You Can Use a Small Cableway



HIGHWAY BRIDGE MATERIALS in Indiana State Park are spotted with a tautline on wooden A-frame towers. Cableway, concrete mixer and small sawmill were only powered equipment here.

SMALL CABLEWAYS are proving their worth in different types of construction operations — handling materials in remote areas and across natural barriers or ranging across a construction site many acres in area.

The tautline cableway is well known on large jobs and generally is of massive design with large and complicated machinery. But Sauerman Bros., Inc., known best for its excavating and materials handling systems employing the drag scraper and slackline cableways, is bidding for recognition of the small tautline cableway as an excellent tool for the smaller contractor.

These smaller units (adaptable to meet practically any situation) are opening new fields of usefulness as contractors and others with unusual materials handling situations become aware of their unique versatility and flexibility. The smaller tautline has proved time and again that it can show real economy—and especially so when working over difficult terrain.

Sauerman Bros. considers small tautline cableways to have a span less than 600 ft. The firm's conception includes portable supporting towers because they usually are simple guyed masts or A-frames. Head and tail towers may be fabricated from timber—often found right on the scene of operations. Erection time and labor costs are a minor expense, because

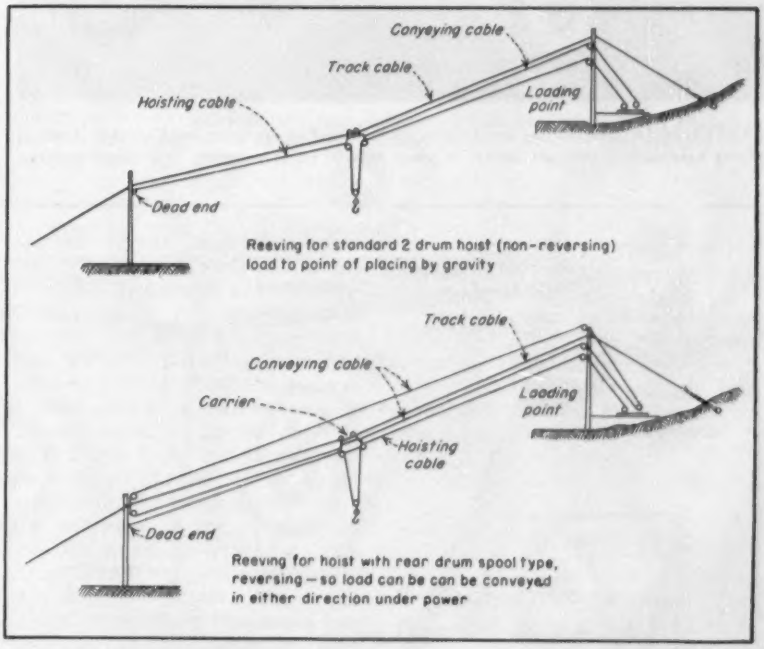
CONCRETE FOR REPAIR of dam owned by power company on Kaw River in Kansas is spotted with a cableway, with the men at the bucket getting a final assist from the truck at right pulling on a rope. Tower is modified electric line tower.

an A-frame tower built of native materials can be erected rapidly by a few men.

The smaller tautline can be built to handle various materials in varying capacities—easily handling loads up to five tons. For example, such an installation readily takes all the loads encountered in building the average highway bridge, regardless of the type of ravine or stream and its depth or turbulence. The cableway can handle all materials, taking the place of cranes, derricks, narrow-gage railway, concrete carts and temporary trestles.

Its components can be assembled easily, and it can be powered either electrically or by an engine. Its design and usefulness is as varied as the ingenuity of the men who design and operate it. It can be kept quite simple or be made more elaborate where the installation can support a more expensive setup.

For the larger tautlines, steel towers may be used, and, as in the case of the giant cableways, the small ones are moved from location to location, eventually serving a number of construction projects. Towers can be located on differing ground elevations; towers can be designed to be stationary or propelling; various capacities and hoisting distances can be provided;


Conveying cable
Track cable
Hoisting cable
Loading point
Dead end
Reeving for standard 2 drum hoist (non-reversing) load to point of placing by gravity
Track cable
Conveying cable
Carrier
Loading point
Hoisting cable
Dead end
Reeving for hoist with rear drum spool type, reversing—so load can be can be conveyed in either direction under power

TWO EXAMPLES of simple and easy installations that can be erected by the contractor himself. Sauerman will furnish specifications to those supplying data on their needs.

skips and buckets can be dumped mechanically or by hand.

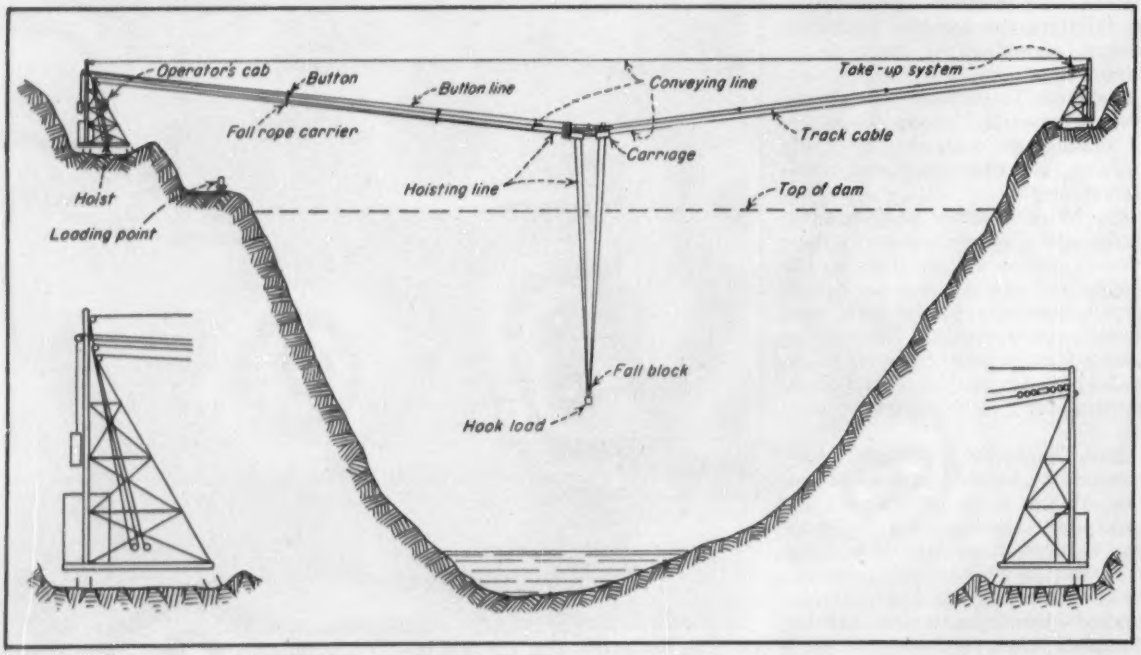
A good example of a useful small tautline cableway was the one installed by the Mustard-Curry Building Corp., Bloomington, Ind., when constructing a concrete highway bridge in Turkey Run State Park, near Marshall. Every bit of material, timber, steel, form lumber and concrete for the 250-ft structure was transported by a

LARGER INSTALLATION for construction of dam and power house on Kennebec River in Maine handles 4-yd concrete bucket to place 150,000 yd of concrete. It is diesel-powered Sauerman 2-ton tautline setup.

The cableway spanned 460 ft across a deep ravine. Towers were timber A-frames 40 ft high, each with two front and two rear guys. The track cable was anchored to logs buried in the ground at the rear of each tower. Further economy was obtained by the contractor by utilizing a used belt-driven hoist which he powered with a 50-hp gasoline engine. Total powered equipment on this job consisted of the cableway, a concrete mixer and a portable sawmill used to cut form lumber.

A larger tautline is in service on the upper Kennebec River for contractors Ellis C. Snodgrass and H. E. Sargeant on the Indian Pond Dam and power generating facilities for Central Maine Power Co. This Sauerman tautline cableway is rated at 10 tons, handles a 4-yd concrete bucket and spans 960 ft. No electric power is available in this remote area, so the cableway has become the first diesel-powered installation large enough for dam building. Concrete in the dam totals 150,000 cu yd.

And small cableways are useful in permanent installations, too At Lawrence, Kan., the Bowersock Mill and Power Co. installed one across the Kansas River over top of its dam. It transports materials for dam repair and maintenance and workmen ride a special cage to work over the dam and raise or



TYPICAL CABLEWAY as it would appear working on a relatively large span while handling materials for a dam across a deep river channel. A movable head or tail tower (or both) on tracks add any amount of extra lateral range desired.

lower flashboards used to control height of the reservoir. For towers, this one uses modified electric power line towers.

Another serves in northwestern Colombia as an over-stream conveyor, an excavator and a towing device for barges. The Rio Zulia flows between the oil fields of the Colombia Petroleum Co. and the railhead where supplies are received. The stream fills rapidly with silt and it is impossible to ferry most materials across by boat. A bridge would be expensive.

Instead, the cableway delivers two-ton loads across the stream. But it was not designed to handle the huge quantities of supplies that sometimes arrive by the carload. Then, river barges are pressed into service. But first, the tautline cableway, through an extra drum on its hoist, pulls a Crescent scraper back and forth across the river, clearing a passage through sand and mud deep enough for the barges. Then the cable that had pulled the scraper moves barges back and forth across the temporary channel.

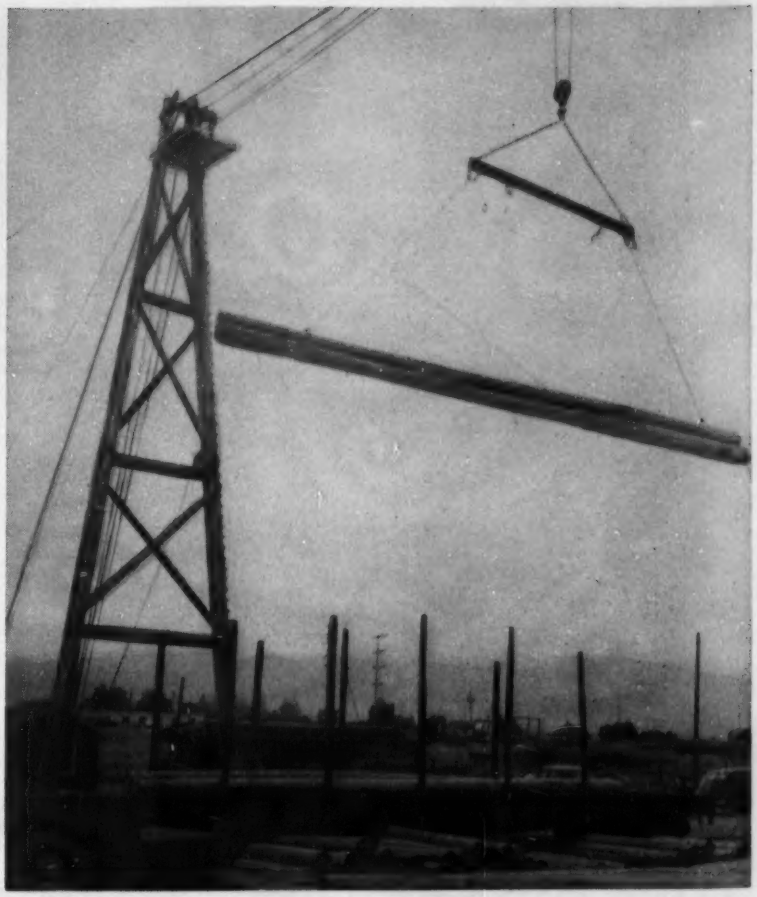
Towers on Tractors

Large construction sites can be served well with a cableway on towers that travel on parallel tracks. A typical installation was one that spanned an area 1,100x 1,550 ft, handled all materials used in the construction of aeration and settling tanks and operating galleries and conduits for a sewage plant.

Traveling "towers" of a different but highly useful sort can be had by supporting a tautline conveying cableway from crane boom attachments mounted on crawler tractors. In one such application, the contractor was placing a rock mat on a river bank—one supporting tractor at the top and the other at the bottom of the slope.

The tractors made it possible to relocate the cableway as the work progressed, and the tautline made it easy to place material on a slope not easily negotiated by wheeled or crawler equipment. In addition, there was only a moderate extra investment for equipment not already owned by the contractor. Similar cableways have been built by using two crawler-mounted cranes.

One contractor found a cableway useful when putting an addition to an industrial building along the edge of a small river. He had no room for storage of materials around the site. So he located his supply yard in an open area directly across the stream and conveyed form lumber, reinforcing steel, concrete and other building materials to the structure as he needed them on his 360-ft cableway.



INEXPENSIVE A-FRAME, some wire rope, a simple carriage and hoist and any convenient power is about all that is necessary to handle loading, unloading and stacking in a materials yard.

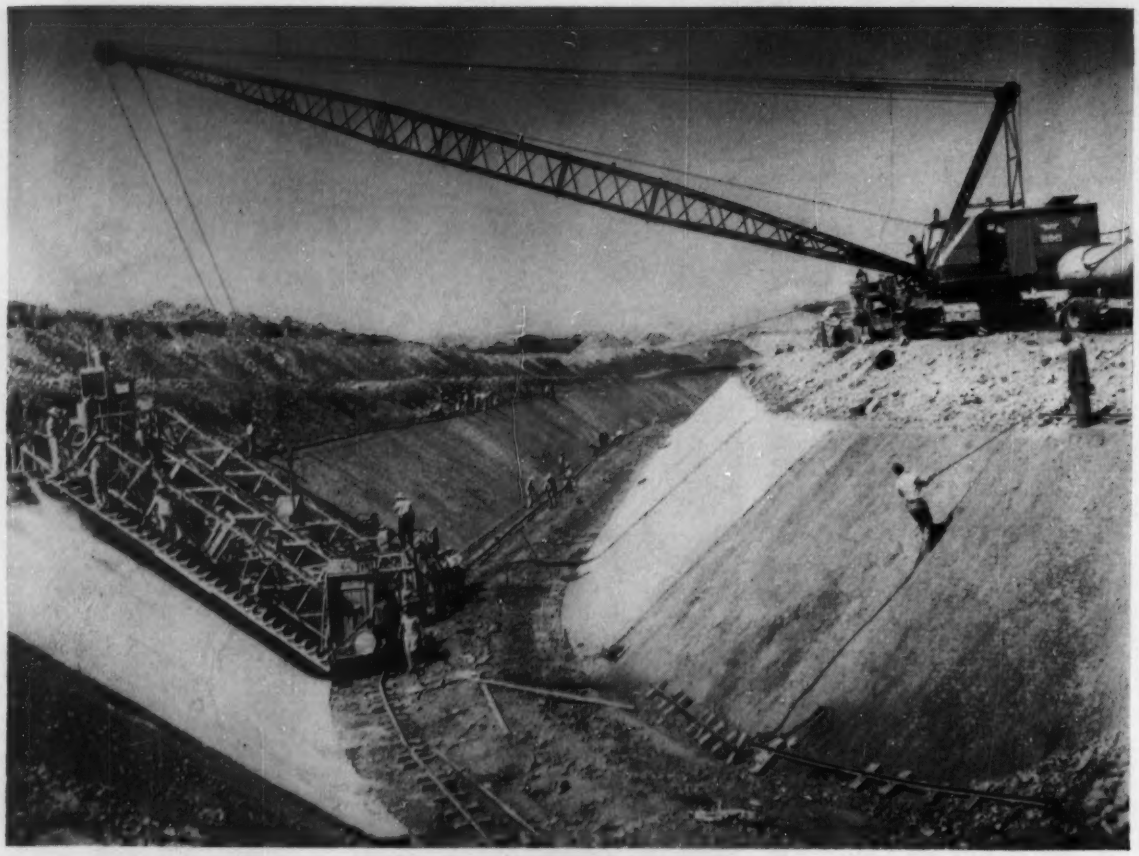
When the E. J. Albrecht Co. of Chicago built the power plant for Wolf Creek Dam in Kentucky, the government agreed to furnish aggregate for the work—delivered to the left bank of the stream. But the power house was being constructed on the opposite bank, 1,000 ft across the water. Truck delivery would have entailed a long haul and the construction of roads. A belt conveyor, supported by adequate suspension cables to hold it in high winds, would have been too expensive for the 100,000 tons of aggregate.

A cableway rated at 4 tons was installed, its carriage traveling 1,200 fpm. Ground elevation at loading point was 280 ft above the building site. Hence loaded buckets of aggregate moved down the cableway by gravity to the batch plant across the river.

Its two-drum hoist is powered by a 75-hp, 900-rpm, 3-phase, 60-c motor. The hoist is equipped with a friction brake adequate to stop and hold the load at any spot on the cableway.

Productive Maintenance Pays Off on the Job

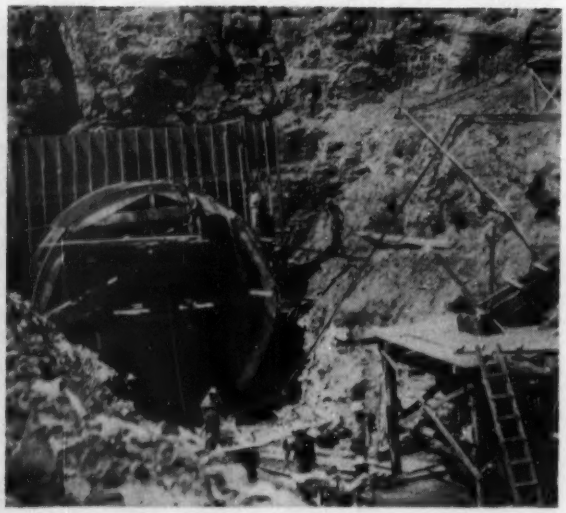
THE SIXTH ANNUAL equipment Maintenance Directory of CONSTRUCTION METHODS AND EQUIPMENT will come your way with the July issue—which again will be devoted entirely to valuable information for contractors on how to keep their equipment rolling through systematic care and the best maintenance procedures.



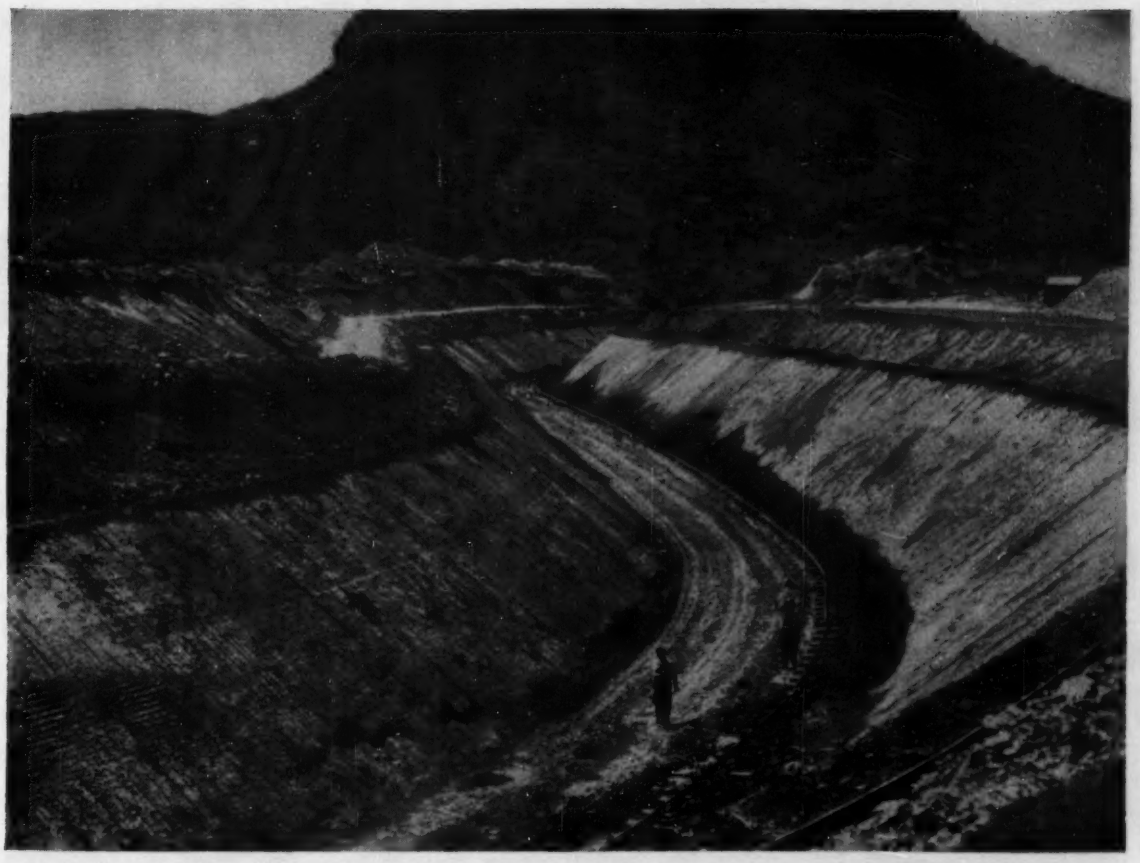
Long-boomed Bucyrus-Erie hands concrete to lining jumbo as . . .

Sonora Opens Area to Irrigation

TUNNELS ARE NECESSARY in three places. Just inside the portal now, this one is being mucked out by an Eimco loader which tosses its bucketful over the end gate of a Ford truck.



CONCRETE LINING is pumped into Bacicique Tunnel No. 1 with a Rex Pumpcrete (under platform at right). Some 1,100 ft in, a booster Pumpcrete was hooked into line to push material farther.



UNLINED CANAL WINDS through rugged country on its way down the Yaqui River Valley irrigation area. Final grade is being checked and slopes cleaned off. See opposite page 45, April issue, for operations where smaller canal gets concrete lining.

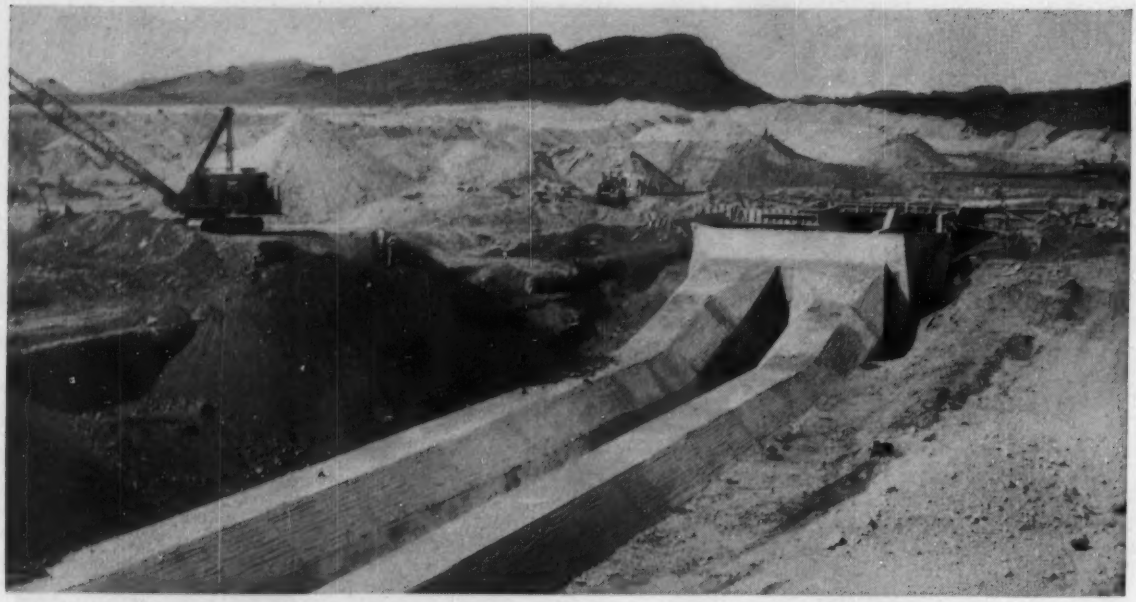
By MARY SAINT ALBANS

IN THE SOUTHWEST SECTION of the Mexican State of Sonora, the formidable Yaqui River Valley irrigation project involves 65,000,000 yd of excavation. The job will reclaim 500,000 acres of desert land with a yearly crop value of $50 million.

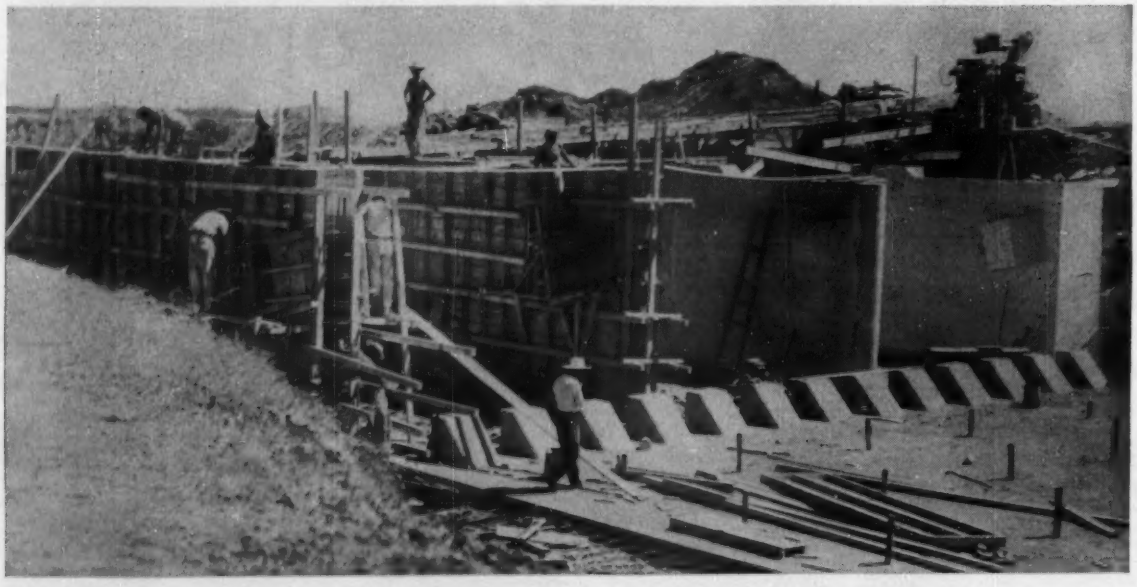
Important in these far-flung operations is the contracting firm of Construcciones Hidraulicas, S. A. (CHISA). This company has dug some 6 mi of rock canal (La Victoria had a subcontract for the remaining 20 mi of rock), 52 mi of earth canal, all radiating drains and laterals and structures and bridges.

Part of the drains and laterals with their structures were subcontracted. CHISA, however, besides digging the long earth ditch and the stretch through rock, built three tunnels 23 ft in dia and totaling 5,576 ft long, their portals, and lined the entire rock section with concrete, a job never before at-

DRILL JUMBO at tunnel face mounts six Le Roi units drilling with carbide inserts. Disintegrated conglomerate is a constant menace, and tunnel is lined with heavy timbers, sometimes set next to each other. Three tunnels used 20 carloads of dynamite.



CONCRETE CULVERTS in multiple barrels are common in many spots where the open canal or lateral was impractical. Note huge mounds of excavated earth in background. Project calls for moving of 65,000,000 yd of dirt, much of it by dragline.



FORM ERECTION for a culvert in an old canal being improved as the job progresses. Culvert liners, concrete pipe 18, 24, and 36 in. in dia, were precast and placed, as needed. Mixer on site is used when encasing pipe and pouring wing walls.

tempted in Mexico. The job services the Alvaro Obregon Dam, recently completed.

The tunnels were probably the toughest phase of this far-flung project. During five or six months of the year this section of Sonora is one of the hemisphere's hottest. Inside the tunnel the temperature and humidity are increased to a painful degree.

Access work on the first tunnel, Bacicique Tunnel No. 1, began in July 1951. A Bucyrus-Erie 54-B shovel did the excavating. Ingersoll-Rand 315 compressors furnished power for rock drilling. A drill jumbo, made in Mexico and mounted with six Le Roi drills, followed. Steel bits used during the first two months were unsatisfactory; tungsten carbide inserts speeded up drilling.

Twenty carloads of dynamite were shot in the three tunnels with about 80 yd dislodged at each blast. Hercules Gelex 45% and Gelamite 40% were used, the amount varying with the type of terrain encountered. Bacicique No. 1 took about 2.25 lb per yd; Bacicique No. 2 needed about 3.75 lb per yd.

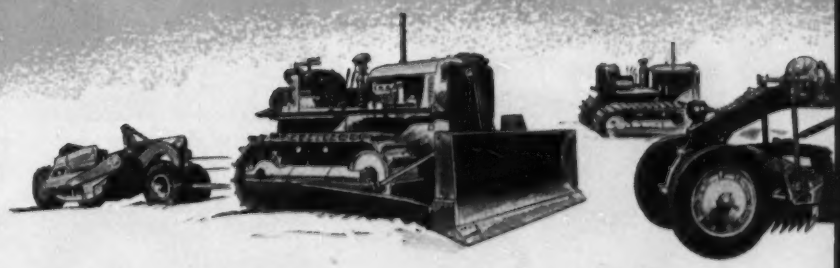
The disintegrated conglomerate, called boucari, made cave-ins a constant menace. The tunnel was lined with 12x12 hardwood Alamo wood frames. In the worst sections they were set next to each other;

(Continued on page 70)

ANNOUNCING A

$10,000 GUARANTEE ON USED EQUIPMENT!

Never before a guarantee like this! Only your CATERPILLAR DEALER offers a "BONDED BUY" on used Caterpillar-built equipment backed by a bond of $10,000.



DON'T GUESS OR GAMBLE ON USED EQUIPMENT

You KNOW what you're getting at your CATERPILLAR DEALER

Your Caterpillar Dealer now offers you a "BONDED BUY" on used Caterpillar-built equipment backed by a bond of $10,000, issued by The Travelers Indemnity Company. He gives you this protection when you purchase a "BONDED BUY" machine.

This is the *first* time in the heavy-duty machinery field that such an offer has ever been made!

You are also offered two other classes of used equipment buys—"Certified Buy" and "Buy and Try." These cover used units of *any* make.

What does this mean to you? *It takes the guess and gamble out of buying used equipment.* You know what you're getting. Your assurance is in writing. What's more, *no matter what your needs, cost-wise or work-wise,* you have a *choice* to meet them.

Only your *Caterpillar Dealer* offers you this across-the-board selection. The best source of new machines, he's also your best source of used machines. Whether you're in the market for one, a few or many, he's the man to see for your *best* buy. See him today for complete details on guaranteed used machines!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

Your Caterpillar Dealer offers you three clear-cut classes of used equipment. He backs each one in writing. You buy with confidence, sure that the equipment is honestly described. See him for the best values on the market!

(1) "BONDED BUY" Only the best in used Caterpillar-built equipment. Each "BONDED BUY" machine is backed by a Dealer's Guarantee Bond equal to the purchase price of the machine up to a maximum of $10,000. This provides a guarantee for thirty days against unsatisfactory performance due to defective parts. If a part should prove defective within the guarantee period under the normal conditions of your job and with proper maintenance, your dealer will put your machine back into operating condition *with no charge to you for parts and labor* up to the amount of the bond. The Dealer's Guarantee Bond is backed by The Travelers Indemnity Company. Your Caterpillar Dealer gives you this protection with your purchase of a "BONDED BUY" machine. Look for the "BONDED BUY" symbol—it's your assurance of the best in used equipment.

(2) "CERTIFIED BUY" Next best buy in used equipment! "Certified Buy" covers machines of any make in good condition. Your performance guarantee is in writing backed by your Caterpillar Dealer.

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Here's complete treatment for snake bite in a compact pocket packet. The Venex kit is simplified so the victim can treat himself. Medically approved venom-extraction method works immediately removing poison.

ImunOak* FOR POISON OAK | **ImunIvy*** FOR POISON IVY

Build immunity or treat the effects of these poisonous plants with ImunOak or ImunIvy. Easily administered orally or injected by a physician, these extracts have proven clinical records of prompt and marked relief.

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*T. M. REG.

FOR IRRIGATION . . . Continued from page 68

PRODUCTION LINE for canal lining begins with a Ford batch truck supplying Koehring 16-E Twinbatch paver. Bucyrus-Erie crane swings concrete bucket from mixer to jumbo.

CURING COMPOUND (Hunt's Curacrete) is sprayed over newly laid lining, as jumbo advances. Contraction joints are sealed with Techkote mastic, pumped in under pressure.

in other sections they were separated up to 1 yd apart.

To finish Potrero tunnel, a Blaw-Knox batcher and a 28S Rex mixer poured concrete into a Rex Pumpcrete which delivered the material through a 7-in. pipe. At Bacicique Tunnel No. 1, Ford trucks dumped into a Johnson batcher and mixer which emptied into a Rex Pumpcrete powered by a Waukesha engine. This pumped the concrete through a 6-in. tube into the tunnel's interior where a booster Pumpcrete operated.

The Pumpcrete moved the material up to 1,100 ft without a hitch.

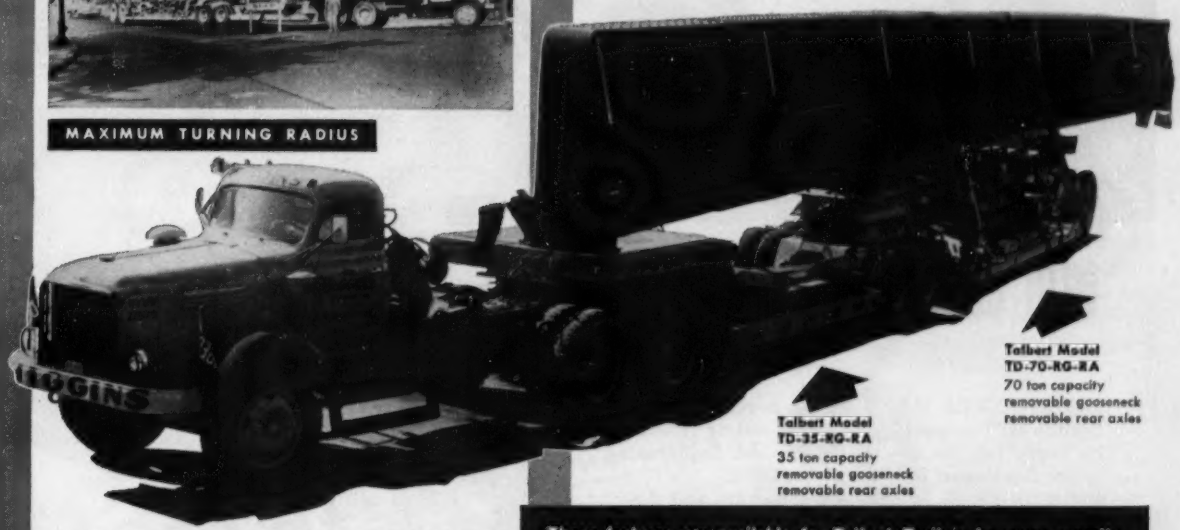
(Continued on page 74)

MINIMUM CLEARANCE

MAXIMUM TURNING RADIUS

"it's just another move" for a TALBERT TRAILER

We're using this picture story of a move made by Wm. Higgins & Sons of Buffalo, N. Y., to demonstrate the adaptability of the Talbert Trailer. The load is supported on the rear trailer and the back bridge (removable rear axles) of the lead trailer . . . with the lead trailer acting as a spacer to give the rig extreme turning radius.



Talbert Model TD-70-RG-RA
70 ton capacity
removable gooseneck
removable rear axles

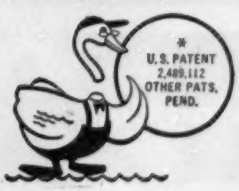
Talbert Model TD-35-RG-RA
35 ton capacity
removable gooseneck
removable rear axles

These features are available for Talbert Trailers in every capacity

Removable Gooseneck	Raised Center Deck
Fixed Rear Axles	Drop Side Deck
Removable Rear Axles	Beam Deck
Removable Third Axles	Single Axle Dolly
Standard Deck (flat)	Jeep Dolly

Extendable pole trailer reach

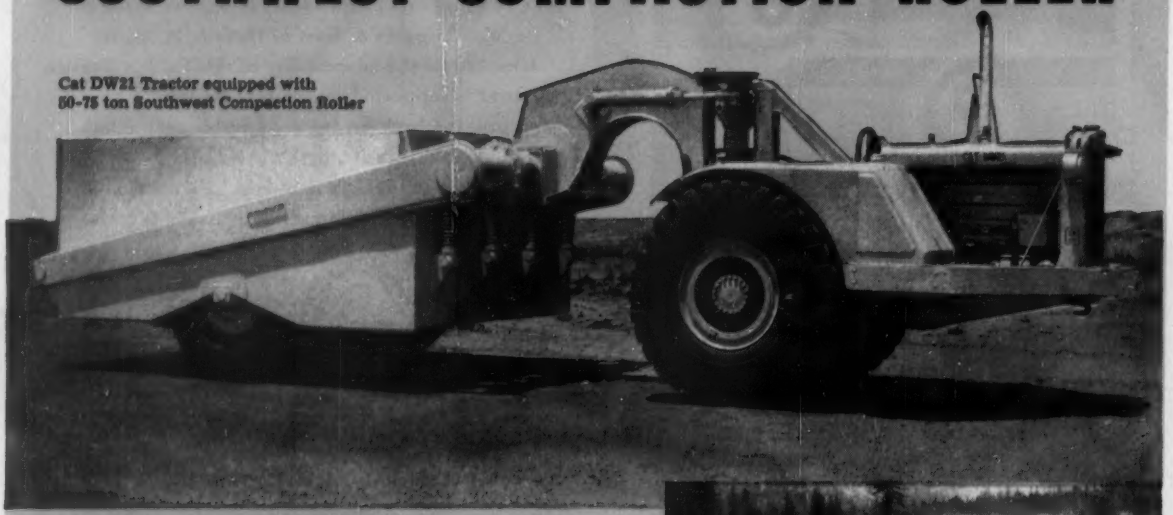
For additional details request Catalog No. 104



THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trailers and dump semi-trailers

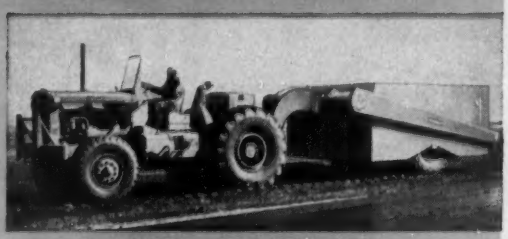
THE TALBERT-WAY IS THE EASY WAY

NEW COMPACTION RECORDS SET BY SOUTHWEST COMPACTION ROLLER



Cat DW21 Tractor equipped with 50-75 ton Southwest Compaction Roller

with Caterpillar Diesel Tractors



USING FEWER PASSES over heavier lifts the Southwest Compaction Roller is setting new records on every job. *On the bigger jobs* the combination of the Southwest Roller and Cat DW21 keeps pace with 24-hour job schedules and the largest earth moving equipment. With the extra flexibility of the exclusive Southwest independently oscillating weight-box units, you get uniform compaction weight on each tire regardless of ground contour. And there is no bridging, no shifting of load.

To suit varying job requirements the hauling yoke is sectionalized for adding or subtracting weight boxes . . . the yoke is also flanged to permit changing the draft beam assembly . . . and the weight boxes can be filled with any material to obtain desired total weight. Sizes and capacities range from 10 to 100 tons. Write for compaction data covering various types of soil and for illustrated literature.

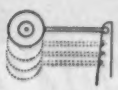
CONSTRUCTION MACHINERY DIVISION
Southwest Welding & Manufacturing Co.
ALHAMBRA, CALIFORNIA

EVEREADY BRIKSAW

CUT ANY MASONRY MATERIAL FAST... ...AT LOWEST COST!

Cutting WET (Dustless) or DRY, Eveready Brik-Saw is the fastest, most efficient Masonry Saw on the market. The simplicity of BrikSaw's design plus the EXCLUSIVE labor-saving features, make BrikSaw the most profitable to operate masonry saw for any job.

EXCLUSIVE BRIKSAW FEATURES



"Adjusta-Height" lets cutting head change elevation for materials of varying thickness . . . adjusts in 4 seconds.

Swing the cutting head to any desired position with this "Toe-Matic" foot treadle. Fast shift from one type of masonry material to another.

One-piece cutting head for immediate, easy portability. Off saw frame in 21 seconds flat!

Automatic pressure control for the blade. Adjusts cutting pressure to hardness or softness of material.

EVEREADY XTRA-CUT ABRASIVE BLADES

Consistent quality — the result of continuous oven processing . . . oven temperature never varies . . . product control is absolute. EVEREADY "XTRA-CUT" Blades are available in both WET and DRY cutting specifications to fit every Masonry and Hand Power Saw.

YOUR EVEREADY DEALER CARRIES THE MOST COMPLETE LINE OF MASONRY AND CONCRETE CUTTING EQUIPMENT

INCREASE YOUR JOB PROFITS

Increase job profits . . . lower cutting costs with a PORTABLE Eveready BrikSaw on the job. Cut any shape, any size . . . all types of Masonry, Stone, and Refractory materials in SECONDS . . . Always a better, faster job with EVEREADY BRIKSAW.

EVEREADY TUFFIE REINFORCED BLADES

For Masonry Saws and Hand Power Saws. Virtually unbreakable . . . recommended for difficult edge cuts . . . grooving . . . grinding cuts. Internally reinforced with NYLON "SAFETY-WEB". You can drop it, bend it, twist it.

FREE BOOK

FREE BOOK on Masonry cutting . . . requested by more than 18,000 . . . will be sent without obligation . . . or ask your dealer.

EVEREADY POWR-DRIVE CONCRETE SAW

Takes the "Push-Pull out of Concrete Sawing—drives FORWARD AT CONTROLLED SPEED! "POWR-DRIVE" increases cutting footage with less operator effort—cuts at the lowest possible cost per lineal foot, whether used on small patching or trenching jobs or on continuous, full-scale joint cutting of highways, streets, airport runways.

EVEREADY RED-I-CUT DIAMOND BLADES

NEW Continuous Rim

For Masonry Saws cut two to three times faster than standard abrasive blades when used to cut hard, dense, vitreous materials such as Glazed Tile, Glass Block, Fire Brick, Marble, etc.

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in Most Principal Cities in the United States and Canada

Write for the Name of Your Nearest Dealer.

EVEREADY BRIKSAW CO. ● 1509 S. MICHIGAN BLVD.

CHICAGO 5M, ILL.

Model HIP-600 150 hp Cummins Diesel, equipped with Twin Disc Model CF Torque Converter — Installed by Watson & Meehan (Cummins dealer, San Francisco).

Torque Converter Drive for your New Power Unit

Twin Disc Torque Converters are available in 3 sizes, with 7 capacities each, for any type gas or diesel engine rated from 40 to 750 hp. The 3-stage design provides these advantages:

- Picks up heavy loads smoothly without slipping the clutch.
- Multiplies engine torque up to 6 times, with infinitely variable speed ratios.
- Absorbs shock loads ... saves clutches, engines, drive line components.
- No mechanical connection ... drives through fluid action.
- Engine operates in maximum efficiency range at all times.
- Automatically matches power to load demands.
- Permits "hovering" or holding under power.

Thinking about a new power unit? If so, be sure to ask your dealer about the *money-making advantages of equipping your power unit with a Twin Disc 3-Stage Torque Converter.* Find out how a small, additional investment will return multiplied dollars in *faster* work cycles, *easier* operation, *longer* equipment life ... specify Twin Disc, built by the *pioneer of Torque Converter drives.*

TWIN DISC CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

Branches or Sales Engineering Offices: Cleveland • Dallas • Detroit • Los Angeles • Newark • New Orleans • Seattle • Tulsa

FOR IRRIGATION . . .

Continued from page 70

Beyond that point, a booster Pumpcrete was hooked in. All told, some 34,000 yd of concrete were used in three tunnels, with 61,000 more in the canal lining.

To lower the extremely high cost of rock excavation, the 26 mi of canal which cut through rock foothills were concrete lined. Thus this section of the canal could be made smaller and the amount of blasted rock proportionately reduced. A 6½-yd wide concrete canal at base will carry as much water as an earth canal 22 yd wide. The concrete canal is 5½ yd deep with slopes 1.25 to 1.00. This is the first canal of any size to be lined in Mexico, and the methods had to be worked out. A Bucyrus-Erie 38-B crane swinging a Gar-Bro concrete bucket was located above the canal and it placed concrete for the base.

Jumbos at Work

The sides of the canal were lined by three big lining jumbos. The first one to go to work was brought from the Grand Coulee Dam in the U. S. An International engine powered the Palmer electric plant and a Chevrolet engine ran the winch. The other jumbos, practically identical, were made in Mexico.

A Bucyrus-Erie 38-B swung a Gar-Bro bucket to place concrete into the jumbo forms. The bucket had been built up from 1 yd to 1 cu meter. A Koehring 16S double-drum paver poured directly into the bucket. In 30 sec the dragline could make the cycle from jumbo to mixer and back. With no previous experience, the personnel managed to line 350 lin yd in a two-shift, 19-hr working day.

A block or so farther along the canal another jumbo was serviced by a Bucyrus-Erie 54-B. While the 38-B poured on its own side of the canal, the bigger 54-B lifted its bucket across to the opposite side.

Ford dump trucks emptying dry batches into the Koehrings had bodies divided into four sections, each holding 1 cu meter of sand, No. 1 gravel, and No. 2 gravel mixed. Two sacks of cement were added to the top of the mixture just before dumping. The dump sections of six Fords were especially built in the contractor's shops. Eleven more were rented. When the third jumbo arrived, others were added.

Eight portable vibrators were

(Continued on page 78)

ANNOUNCING *New Loading Production...*

New Operating Ease... New Dependability...

ONLY THE 7-11 OFFERS ALL THESE NEW FEATURES...

- **NEW** heavy-duty 101 HP 6-cylinder industrial engine for power!
- **NEW** heavy-duty 2-speed axle to match job needs — in loading or traveling!
- **NEW** heavy-duty cooling system with large radiator and blower fan!
- **NEW** simplified controls — make operation fast, easy, trouble-free!
- **NEW** tire size — for traction in soft footing!
- **NEW** versatility — switch from stockpile to windrow loading in minutes!

PLUS THESE WORK-PROVED STANDARD FEATURES...

- **BIG** capacity — load up to 10 cubic yards a minute in loose materials . . . to 20 cu. yd. per min. in snow!
- **MATCH** your work — pick a basic windrow or stockpile feeder!
- **FULL-FLOATING FEEDER** an exclusive Athey feature, feeder blades rise and fall to follow the contour of material . . . there's no bulldozing or submerging!
- **MONEY-SAVING SPEEDS** —load from 0.26 to 1.74 MPH . . . travel up to 20.0 MPH!

THE NEW ATHEY 7-11 FORCE-FEED LOADER

Here's the *first* belt loader that has every feature you've ever wanted . . . here's the *first* loader that has the strength and quality construction to guarantee trouble-free work schedules . . . here's the *first* loader designed with the operator in mind to eliminate fatigue and keep production high from 8 to 5 . . . *here's the new Athey 7-11 Force-Feed Loader!*

Into the design of the 7-11 has been incorporated every money-saving feature of the preceding Athey Loaders, plus many new features — proven in action — that increase production capacity and assure steady, uninterrupted operations.

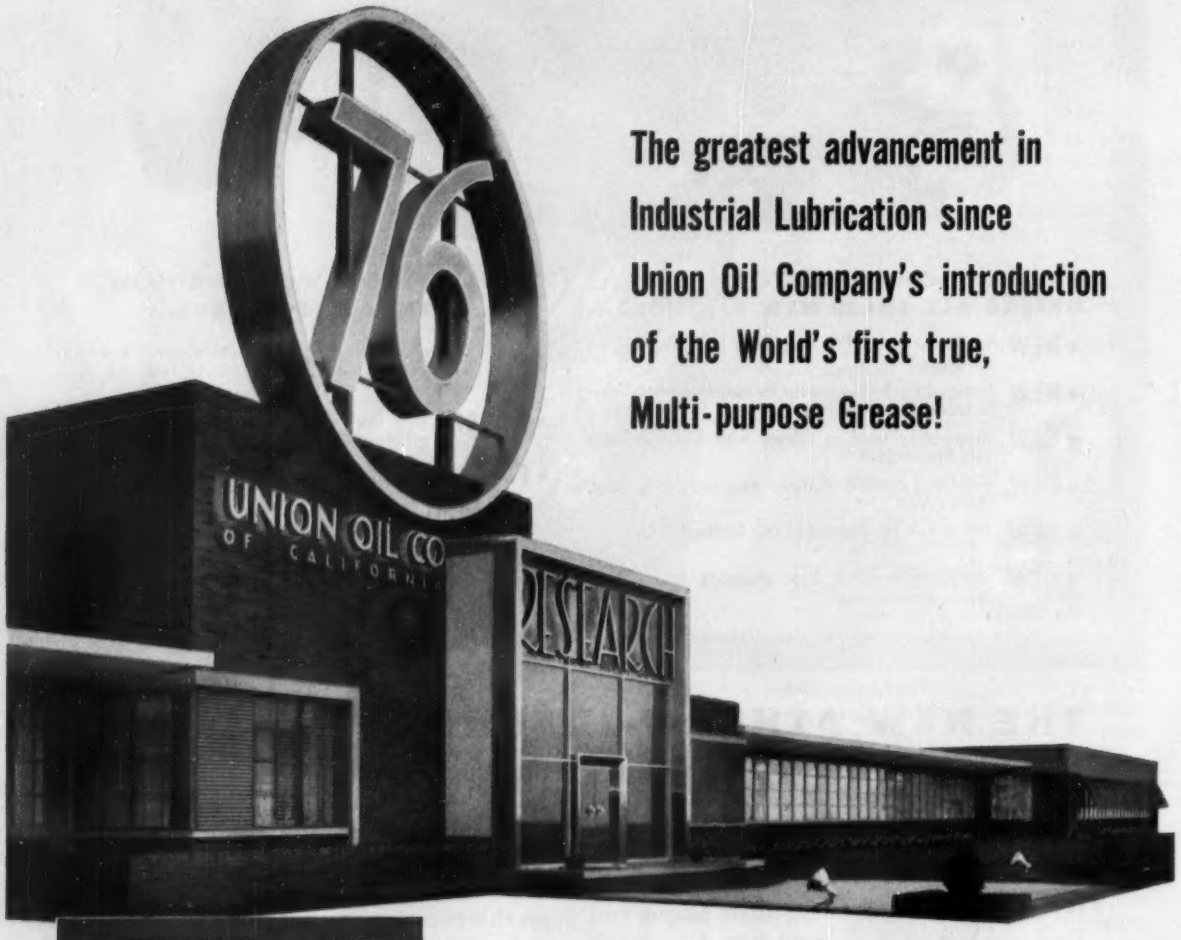
Some of the features of the 7-11 are detailed on this page, but you will have to see them in action to see how they can save you money and boost your production. Ask your Athey-Caterpillar Dealer to arrange a demonstration or write direct to . . .

You can choose the feeder arrangement that fits your needs — the Bulldozer-Moldboard-Auger Feeder, shown above, provides 90" gather width for basic stockpile work. Sideboards may be reversed for windrow loading. The basic Windrow Loader front end, shown at right, has a Tapered Moldboard Feeder with 84" gather width.

Athey PRODUCTS CORPORATION
5631 West 65th Street,
Chicago 38, Illinois

Athey . . . Led with the FIRST Force-Feed Loader . . .
. . . Still Leads with the NEW Force-Feed Loader

NOW NEW IMPROVED



The greatest advancement in Industrial Lubrication since Union Oil Company's introduction of the World's first true, Multi-purpose Grease!

Developed here...

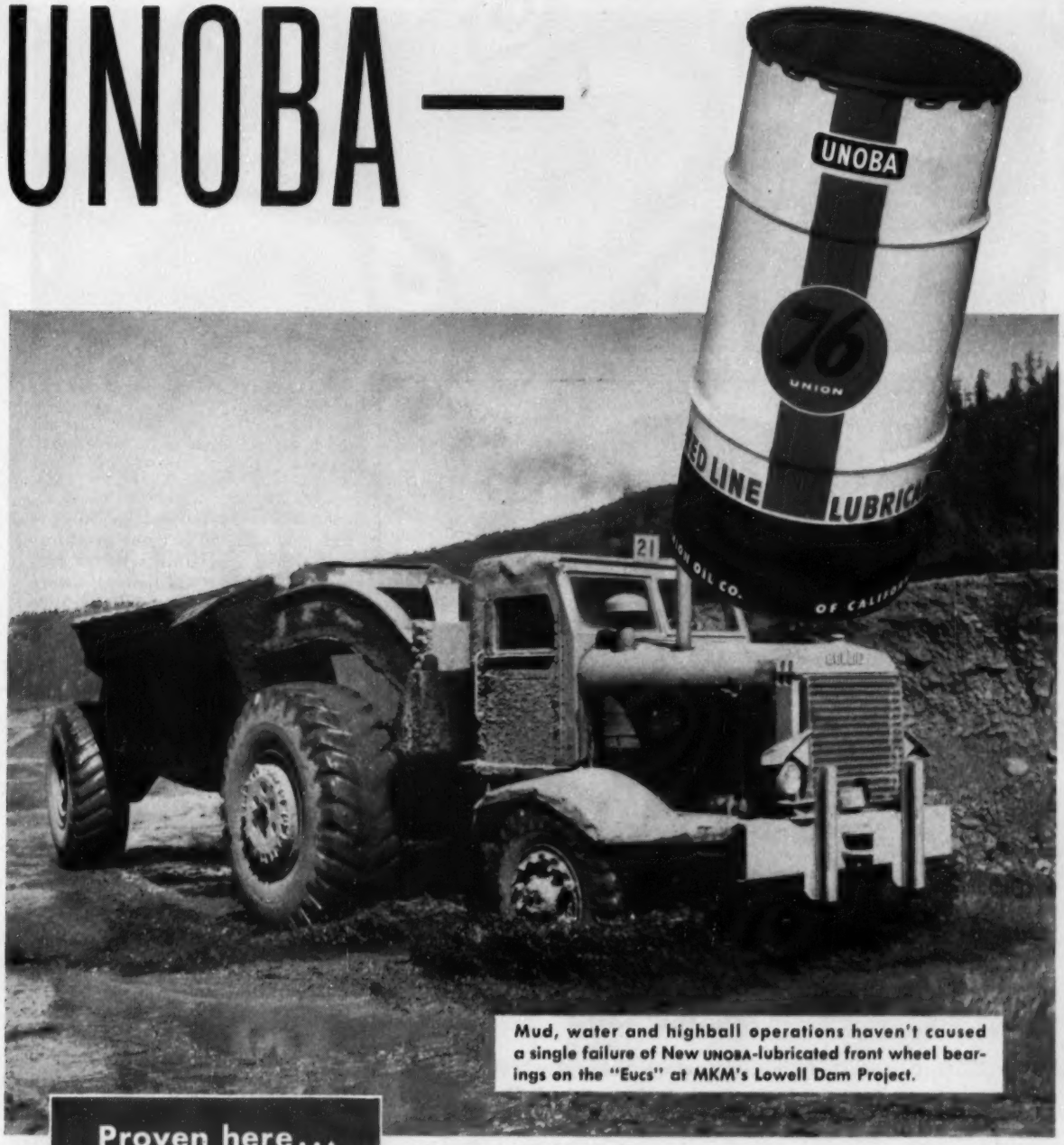
When *New, Improved* UNOBA was first formulated at Union's Research Center, even *our* lubrication engineers found it hard to believe the laboratory test reports. On point after point it proved superior to other multi-purpose greases.

Here's what makes New, Improved UNOBA the finest:

New, Improved UNOBA is made with high viscosity, 100% paraffin base oils... the same oils which are used in Union's finest automotive and industrial oils. When combined with a highly effective oxidation inhibitor, this means greater resistance to hardening even under the severest conditions of friction, high temperature and extended lubrication intervals.

New, Improved UNOBA is compounded with both barium and lithium soap bases... the two finest known. This combination of high V.I., 100% paraffin base oils, oxidation inhibiting agent, and barium-lithium soaps means you get the finest industrial grease available at any price when you specify *New, Improved* UNOBA.

UNOBA—



Mud, water and highball operations haven't caused a single failure of New UNOBA-lubricated front wheel bearings on the "Eucs" at MKM's Lowell Dam Project.

Proven here...

Greases, like the equipment they help keep rolling, are proven in the field. To secure conclusive evidence of its superiority, samples of *New, Improved* UNOBA were tested during the past two years in widely varying industrial applications... on almost every conceivable type of machinery and equipment. Results of these field and storage tests from California's Mojave Desert to the Alaskan Arctic... from logging camps in the Cascade Mountains to the Pacific fishing fleets... have more than satisfied Union's exacting product-development men.

UNION OIL 76 COMPANY OF CALIFORNIA

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FOR IRRIGATION . . . Continued from page 74

CACTUS TREES and rough scrub are bulldozed off the right-of-way for the canal in open country. Then the Caterpillar D8 and ripper tear through to begin the earthmoving job.

1 yard **Scoopmobile**

MODEL LD-5

Compare! 4-wheel planetary drive—4-wheel power steering—all-hydraulic operation—Pow-R-Flex twist-turn flexibility—114 h.p. engine—8 equal speeds, forward or reverse—road speeds to 23 m.p.h. See it in action before you buy!

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• Scoopmobiles • Duo-Way Scoops and Lifts • Stationary Mixers
• 4-Wheel Drive Scoopmobiles, Dozermobiles, Tractors • Mixermobiles

used on the canal sides. To cure the concrete, 80,000 gal of Curacrete, Seal Tex Hunt's white pigmented curing compound, were sprayed over the surface. To anticipate temperature changes, which otherwise would have resulted in devastating cracks, a mastic, made by Techkote Co., of California, outlined big squares.

Four batching plants operated, three Blaw-Knox and one Johnson. Also at the site were a T. L. Smith classifier and a Security scalper screen on the river bank. There were three Koehring pavers and five 16S Dandy mixers.

Three Bucyrus-Erie 38-B draglines and three 54-B's worked on the rock canal and lining job, including approaches and exits to tunnels. One 54-B pulled a roller over the clay lining before concrete was applied; another smoothed the edges. Three Bucyrus-Erie 54-B's, three 38-B's and one P&H dug the earth canal. There were three Rex Pumpcretes, two Rex 28S mixers.

Eleven Waukesha engines were used, five in Rex units, two in tunnel elevators, two in water pumps, one in a welder and one in the classifier plant.

Besides the tunnel jumbos, pneumatic equipment included two Ingersoll-Rand 1,000's, six Gardner-Denver 500's, one Schramm 315, one Chicago Pneumatic 315 and one CP 110. Forty Le Roi and CP rock tools clattered day and night.

A new Caterplilar D8 tractor and four new Euclids were added in 1953. Fifty Ford trucks carried materials.

Responsible for the 52 mi of earth canal was Engineer Eduardo

(Continued on page 80)

Precision Finishing of Concrete The Jaeger-Lakewood Finisher is the most flexible machine yet developed for placing and finishing concrete slab. In addition to a wide range of independent travel and screeding speeds to meet any condition, Jaeger offers the unique advantage of a diagonally adjustable rear screed for laying pitched slab and super-elevated curves without the usual hand work along the higher form. Vibratory equipment includes exclusive bullnose vibratory screed where deep internal vibration is specified.

How Jaeger methods help low bidders

Screw Spreading of Concrete The screw action of the Jaeger Concrete Spreader remixes and intermixes all paver batches to one uniform texture and higher density, positively eliminating segregation. It also gives your operator closer control of the spreading operation. On high production work the Jaeger Spreader can be furnished with oscillating screed for precision strike-off ahead of the finishing machine. Saves the cost of one or more shovelers, and often, the need for a second finisher where otherwise specified. Vibratory equipment can also be furnished if desired.

Low Cost Spreading of Aggregates In one pass, the Jaeger Paver-Type Aggregate Spreader can lay all the tonnage your trucks can deliver — up to 10″ thickness of coarse stone or as much as 12″ of finer or graded materials in widths to 11′, or place an equal volume of material in lesser thickness up to 12′6″ width. You get that production with a machine that costs half the price of a bituminous paver and does accurate work on highway or airport base, or both base and top for secondary roads. Handles any aggregate, plant-mixed stabilized soil or free-flowing bituminous mix. Two models, to fit any trucks.

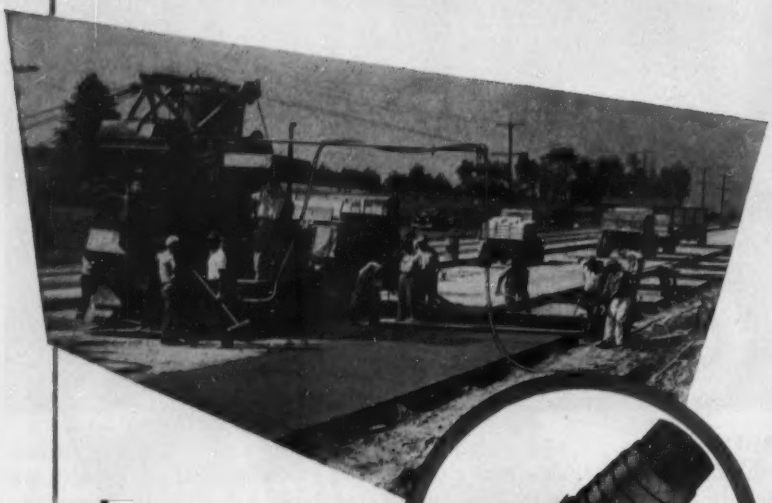
For full information on these machines and methods, operating data and prices, talk with your Jaeger distributor or write us. Catalog on request.

THE JAEGER MACHINE COMPANY

800 Dublin Avenue • Columbus 16, Ohio

AIR COMPRESSORS • PUMPS • LOADERS • CONCRETE MIXERS • TRUCK MIXERS

LONG WEAR,
Under SEVERE SERVICE



in
Every Length

Quaker

REDSKIN WATER HOSE

Long service under the toughest job conditions! Quaker Redskin hose is specifically made to give you that. Non-porous tube is highly resistant to hot and cold water, mild acids, alkalies. Uniform diameter assures full unrestricted flow. Enclosed in rugged cover, resistant to weather and abrasion. Multiple ply fabric reinforcement specially frictioned for added safety. Exceptionally flexible for easy handling. Available in 50′ lengths for pressures up to 225 lbs. Make light work of heavy-duty jobs with Redskin—another Quaker quality product for more savings through superior service.

Write for free folder and name of nearest distributor.

Belting, Hose, Packing and Moulded Rubber of every construction for every need.

QUAKER RUBBER CORPORATION
DIVISION OF H. K. PORTER COMPANY, INC.
OF PITTSBURGH
PHILADELPHIA 24, PA.
Branches in Principal Cities

FOR IRRIGATION . . .

Continued from page 78

Bolivar. This canal is 22 yd wide at the base, 4 yd deep with slopes 1.5 to 1. On one side is a 6½-yd border. On the other an 11-yd border was converted into a road. For every mile of canal 3 mi of road were built. Some 125 mi of roads connected widely separated operations.

Roughly 20% of the earth canal was sand which had to be covered with arcilla or red earth. Four Caterpillar D8 tractors pulling Cat-80 scrapers, capacity 16 yd, did this job.

Miguel Hinich is general manager of CHISA. Carlos Altamirano is in charge of Sonora operations; Reynaldo Schega is general superintendent for Sonora work; Francisco Mendoza von Borstel is in charge of concrete work. Fernando Millan directed construction of the three tunnels.

Much Excavating

Construccines Alpha's subcontract amounted to 6,000,000 cu yd of excavation of laterals and drains. The remaining 7,000,000 yd were subcontracted by other companies. Paralleling each other, drains and laterals are separated by roads 9 yd wide. Drains are about 2 yd wide at the base; the laterals 4½ yd.

Alpha combined this contract with another independent contract involving 2,750,000 yd of excavation on the old Richardson canal. This included drains and structures. A third contract took in many big structures for this canal.

Next to the main camp, a Rex Skipper mixed concrete which was dumped into forms to turn out culvert tubing (pipe) sized, 18, 24, and 36 in. in dia. This tubing was used in about 150 structures.

On the various jobs five Bucyrus-Erie 54-B's were used; two Lorains, a 40 and a 50; two Cat D8 tractors; a Cat 112 motor grader; a Dearborn motor grader; and a Caterpillar Sierra Loader pulled by a D8 tractor.

Most of the serious difficulties were encountered digging drains for the old canal. Forty years ago the Richardson Company (North American) built an irrigation system sufficient to irrigate about 100,000 acres. When the Angostura Dam was completed about 15 yr ago the Mexicans added more canals to irrigate 250,000 acres. But no drains were dug.

For Alpha, Francisco Cortina is resident engineer. Enrique Chavez heads all concrete work.

Let's Clean-up America's Highways
America's highways are beautiful. Don't make them a dumping ground for cans, bottles and rubbish.
MADSEN ASPHALT PLANTS

THE ASPHALT PLANT *that Can't Stop* PRODUCING TOP TONNAGE!

When you purchase an asphalt plant — keep one eye on today's needs and one eye on tomorrow's needs. The MADSEN Model 481 Asphalt Plant fits in with this kind of thinking.

If a 4000-lb. asphalt plant will take care of your needs, purchase the MADSEN Model 481 as a 4000-lb. plant. If you feel that 5 years from now you are going to need a 6000-lb. plant, let our engineers make recommendations now which will save you money. Each of the major plant components such as the dryer, dust collector, mixer, screen, etc., may be purchased separately with a view in mind to increase plant capacity further at a later date. With wise planning and wise purchase of plant components, you can save money and your MADSEN Model 481 can grow with your needs and keep producing that profitable top tonnage year after year.

MADSEN'S experienced engineering staff is always at your service. Why not talk over your asphalt plant requirements with a MADSEN man . . . there is no obligation.

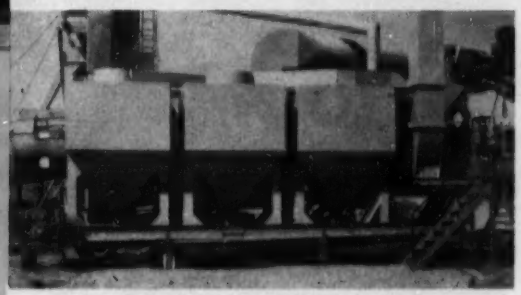
MADSEN
MODEL 481
ASPHALT PLANT

THE MODEL 481 OFFERS MORE THAN 24 IMPORTANT FEATURES . . . HERE ARE SOME OF THEM:

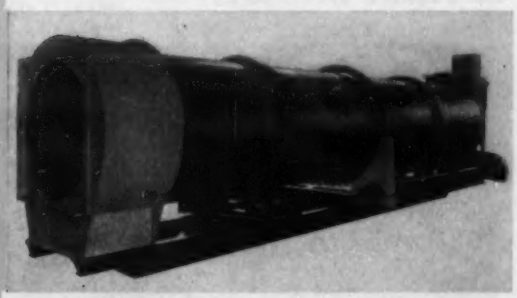
- **Unit construction — designed for easy stacking in factory-matched unit sections. Speeds field erection.**
- **Exclusive bin design (Patent Pending) . . . eliminates segregation, provides uniform aggregate withdrawal, and promotes improved aggregate distribution in weigh-box.**
- **Built-in exhausting duct system frees plant of dripping moisture and dust leakage around screen, weigh-box and mixer.**
- **Mixer operator station on end of plant away from fumes and heat . . . affords better view of plant operation.**

MADSEN offers the broadest range of batch capacity asphalt plants and asphalt plant equipment in the industry. Whether your requirements call for a complete asphalt plant or sub-assemblies, gears, pumps, jacketed valves, etc. . . . it will pay you to SEE MADSEN FIRST!

MADSEN — Equipment that Serves



MADSEN "ON-THE-SQUARE" DUST COLLECTORS (Pat.)... *MADSEN Dust Collectors are built in one, two, three or four cyclone units for all sizes of asphalt plants of the batch or continuous type.*



MADSEN AGGREGATE DRYERS... *MADSEN Dryers combined with MADSEN Dust Collector Units offer an outstanding drying combination for paving plant operations. Built-in sizes from 32 to 84 inches in diameter and from 10 to 40 feet in length.*

MADSEN IRON WORKS, INC.
14100 E. ROSECRANS AVE., P. O. BOX 38
LA MIRADA, CALIF.

Skillful Blasting on New York Thruway

1. Man Leaves... Area is deserted except for blaster at top right. About 100 holes on 6-ft centers, averaging 24 ft deep with 12 ft of sand stemming, are loaded with ½ ton of explosive.

3. Fines Show... Extent of breakage begins to show as bank starts moving inward all around under perfect control of Atlas Powder's Gelodyn No. 3 set off by milli-second delay Rockmaster caps.

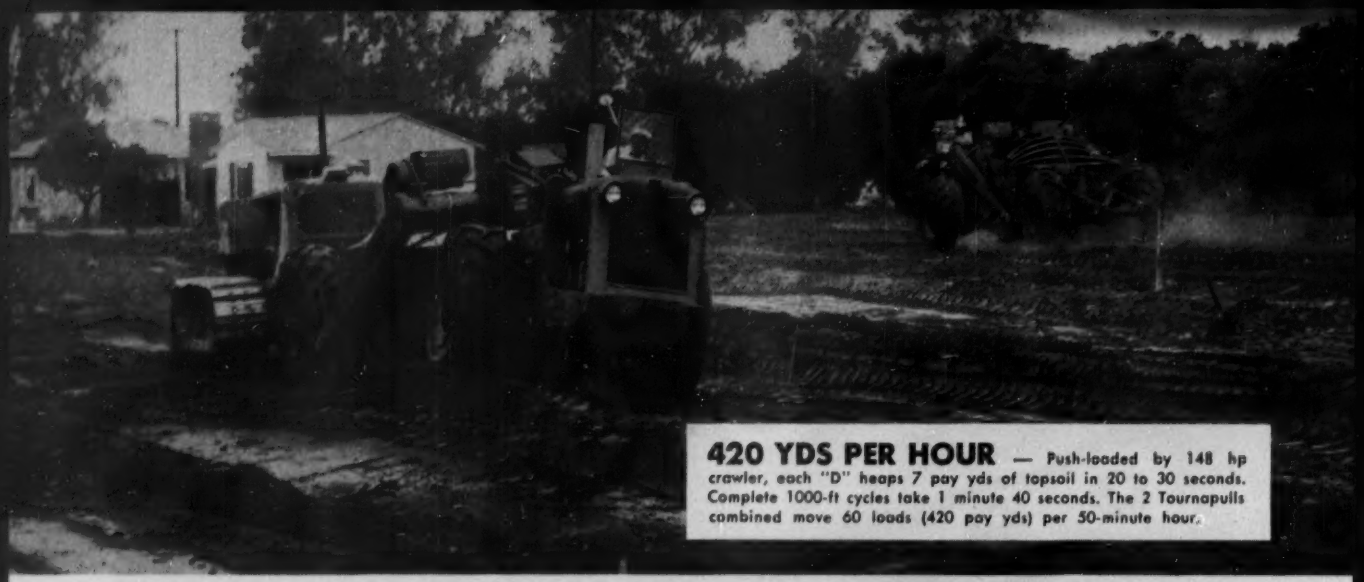
5. End of Blast... Broken rock rolls inward from all sides and gases begin to clear away. Contractor is L. G. DeFelice & Son, Inc., North Haven, Conn. Paul Harrison is rock superintendent.

Shatters Rock Safely on Edge of Town

2. Rock Heaves... As blast goes off, first wisps of gas appear and entire mass of rock is lifted several feet. Here Thruway is adjacent to Suffern, N. Y., buildings; blasting is 50 to 75 ft above them.

4. No Throw... Blast at its height with no flying rock. Roadway is blasted in two passes, the first section away from the buildings and the remaining ridge then is pushed uphill.

6. Move It Fast... Proper loading of holes shattered most of material for easy shovel handling. Expertly delayed charges break and move rock as desired. Note unlittered haul road at right.



420 YDS PER HOUR — Push-loaded by 148 hp crawler, each "D" heaps 7 pay yds of topsoil in 20 to 30 seconds. Complete 1000-ft cycles take 1 minute 40 seconds. The 2 Tournapulls combined move 60 loads (420 pay yds) per 50-minute hour.

60 loads per hour on 1000′ cycle

California contractor sets fast pace on short hauls with two 7-yd. scrapers

Crowell & Larson Co., Covina, Calif., handle small scattered assignments profitably because of the high speeds and mobility of their 2 D Tournapulls. Not only do the rubber-tired 28 mph "D's" work fast on the job, but they make fast, self-powered moves between jobs over main highways and city streets. That's particularly important because they must often travel through congested Los Angeles and its suburbs to reach jobs.

Average 23 mph through traffic

Since their purchase early in 1953, the 122 hp "D's" have been used primarily to build new roads and streets for future residential areas.

On one typical operation, the 28 mph Tournapulls finished a job in Los Angeles . . . traveled through heavy traffic . . . completed a 40-mile trip to Covina in 1¾ hours. Here, they went right to work on an 1100-yd. project—cutting a new road through fields to a new housing site. Equipped with sideboards, "D's" were push-loaded with 7 pay yards of black topsoil and sand in 20 to 30 seconds. Averaging 13 mph on a 1000′ cycle, each machine completed 30 round trips, delivered 210 pay yards per 50-minute hour. In about 3 hours, the work was done, and off they went for their next assignment.

"Work several jobs in same day"

"We like the mobility of our D Tournapulls," says Partner Willard Larson. "We have worked them on several different jobs in one 8-hour day. Their production is good, too. They have moved over 15,000 yards in 5 days."

Job Foreman Gene Carpenter adds, "Tournapulls sure save us time and money in transporting from one job to another. They do an excellent job all-around. They're very fast in cutting new roads and streets."

How about your needs?

You can buy these electric-control Tournapulls with greater confidence than ever before. Westinghouse Air Brake's quality manufacturing and inspection traditions have been added to LeTourneau's earthmoving leadership to provide you with the best tools in the industry. See your LeTourneau-Westinghouse Distributor for more information on equipment to fit your needs.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-481-H-b

With apron opening of 54½ inches, load clears quickly. Big low pressure tires help compact fill. Says Operator C. P. Aldridge, "I've run other makes of equipment before, but have never enjoyed operating as much as I do now with these D Tournapulls. They're sure easy to handle."

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

DEEP HOLES for foundation footings are bored economically with a telescopic boring bar driving the bucket through clay.

Hole Borer on Crane Gets Footings in Fast

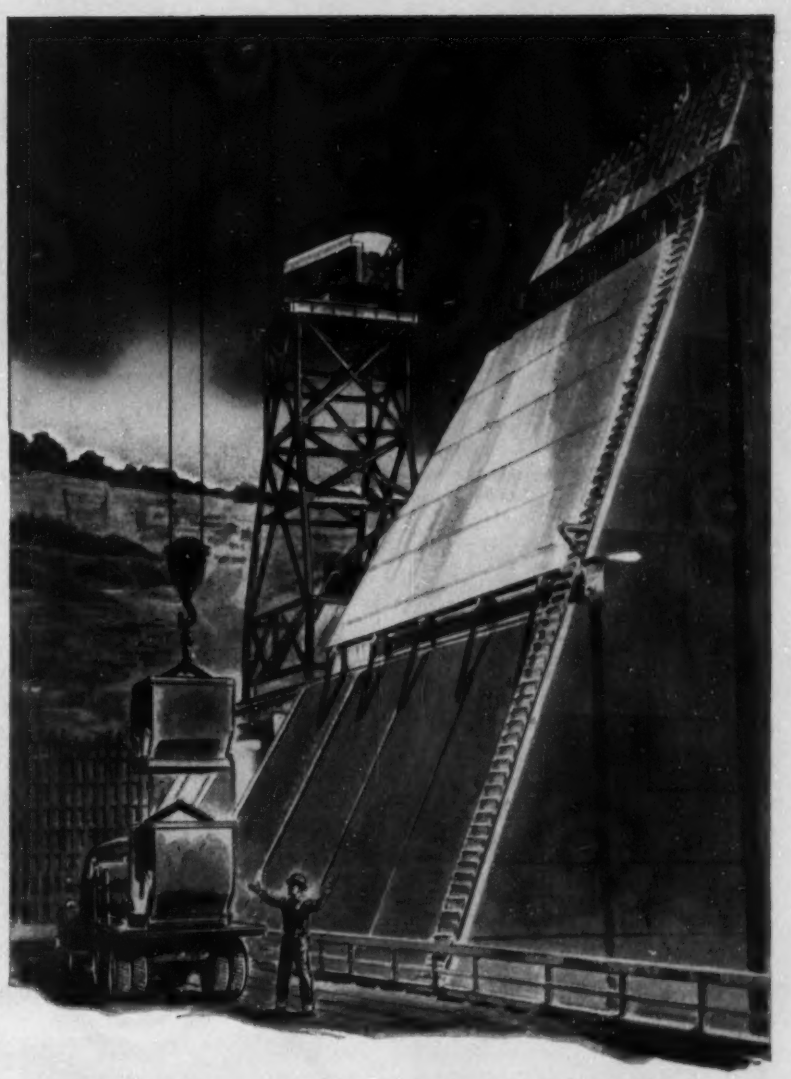
UNREINFORCED CONCRETE foundation footings as much as 100 ft deep and up to 5 ft in dia are being put down rapidly and economically for the new $29,000,000 power plant under construction on the Toledo, Ohio, waterfront by the Toledo Edison Co.

Foundation work for the big plant is being done by A. Bently & Sons, Toledo, making extensive use of two Gar Wood Foundation borers installed on Gar Wood ¾-yd crawler-mounted excavators. Each foundation borer has a rotating digging bucket with hydraulically operated belling vanes to make hole boring and belling a one-shot, production-line operation.

As holes go beyond 50 ft in depth, boring with hydraulic equipment becomes much more difficult because of complications in designing hydraulic controls. Hence for deeper holes, a straight telescopic boring bar is used and hole bottoms belled manually.

On the Toledo job, the contractor tells how a sample hole, 38 in. in dia and 67 ft deep, was dug in 4 hr. Excavation was through 14 ft of yellow clay, 7 ft of wet blue clay and the balance through dry blue clay approaching hardpan. The bucket had no belling vanes and holes were belled manually 12 ft in dia and 9 ft high by letting down caissons.

The Gar Wood foundation borers are attached to and supported by Gar Wood 75 cranes (described in CM&E Feb. 1954, p. 113) and can be run by one operator. Concrete is poured as soon as a hole is completed.



Building a Reputation

The ability to do the job well — that's what builds a reputation in the construction field, both for individual contractors and for the companies that serve them.

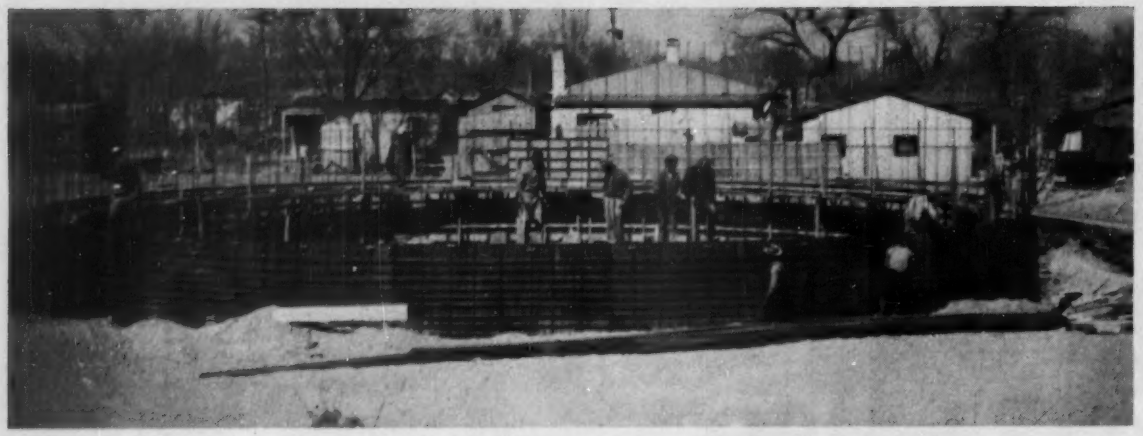
For years, the Ætna Casualty and Surety Company has been providing contractors with surety bonds — promptly and efficiently. That's why the Ætna has grown with the construction industry, why contractors everywhere turn to the Ætna for their bonding needs.

The next time *you* need a bond, why not join the many hundreds of leading contractors who bond with Ætna — always.

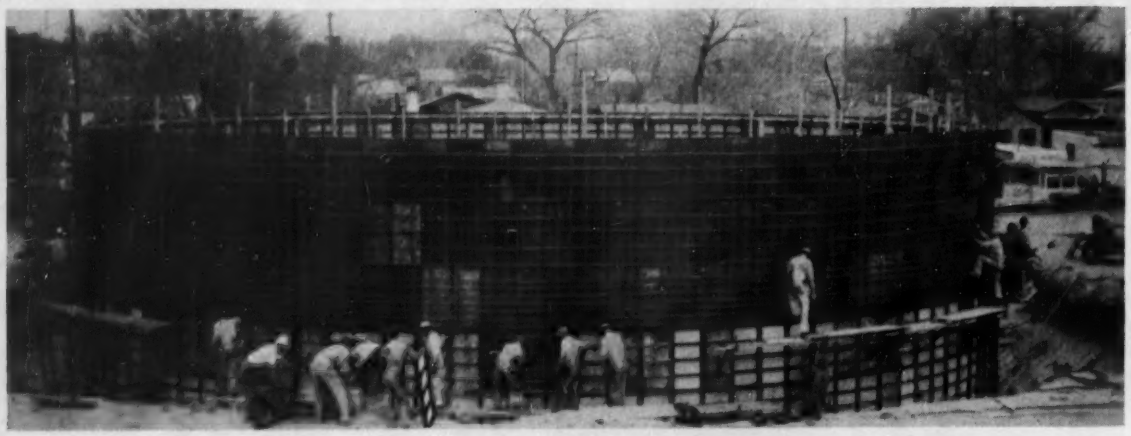
No job too big--no job too small

ÆTNA CASUALTY AND SURETY COMPANY

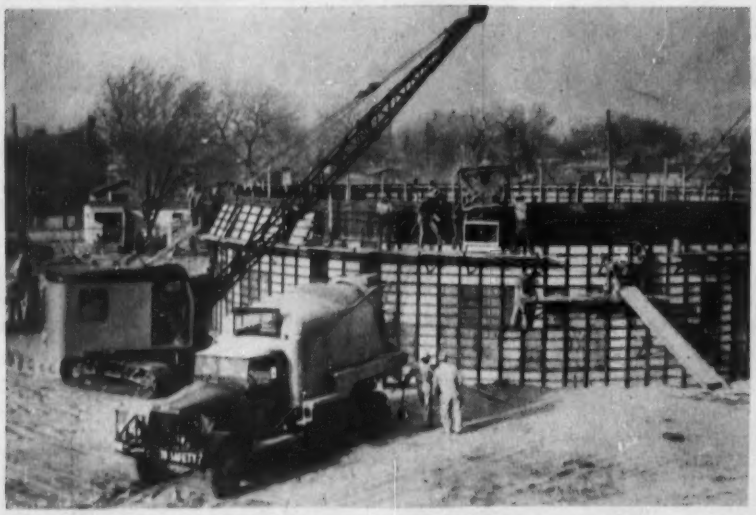
AFFILIATED COMPANIES: ÆTNA LIFE INSURANCE COMPANY
AUTOMOBILE INSURANCE COMPANY • STANDARD FIRE INSURANCE COMPANY
HARTFORD 15, CONNECTICUT



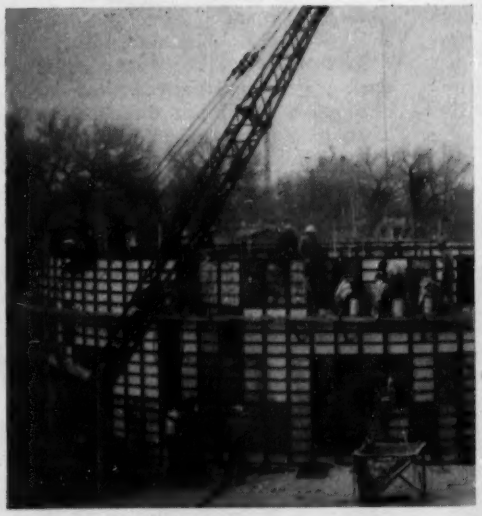
CIRCULAR TANK 75 ft in dia, with walls 26 ft high and 14 in. thick for a sewage plant project in Albuquerque, N. M., presented some unusual concrete pouring specifications that were solved by the use of Universal's Uni-Forms.



11:30 am FORMING AND POURING were in full production at the 10-ft level.



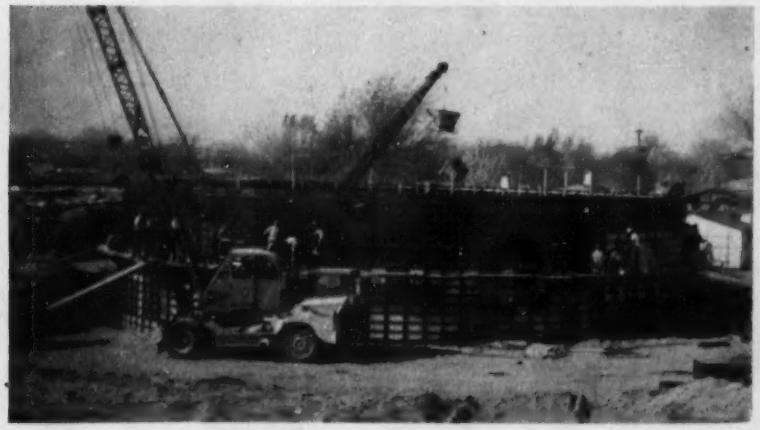
4:00 pm POURING at 22-ft level. Scaffold setters on final placement.



4:45 pm UNI-FORMS now completed.

Forming and Pouring Concrete at Same Time

9:30 am POURING started at 8:00 am. Here is 6 ft of concrete in place.



3:00 pm POURING at 18-ft level is complete. Forms are at 22-ft level.

COMBINING ALL ELEMENTS of economical construction in strict compliance with difficult specifications is never an easy job, but when concrete pouring specifications call for a maximum free drop of concrete of 4 ft, a 26-ft high wall presents a problem that requires an ingenious solution.

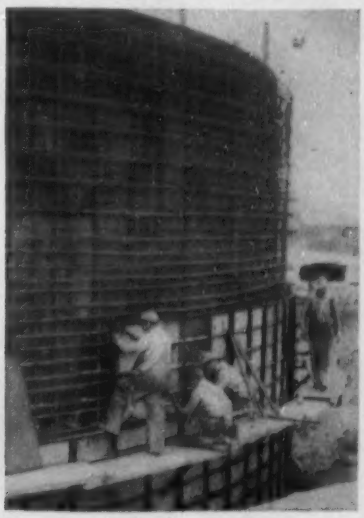
On the sewage plant project in Albuquerque, N. M., being constructed by C. H. Leavell & Co., of El Paso, Tex., this problem occurred on a circular tank 75 ft in dia, with walls 26 ft high and 14 in. thick, and was solved by a spectacular demonstration of careful planning and full utilization of the advantage of the forming equipment on the job.

Pour pockets could have been placed in the forms, but Paul Nigh, job superintendent, concluded that their installation and scaffolding costs were high, results unsatisfactory, and controlled placement was still doubtful. The use of elephant trunks was also discarded as being impractical.

Since Uni-Forms, manufactured by The Universal Form Clamp Co., were committed to this project for all concrete forming, the inherent advantages of this material were utilized to solve this problem. Hence the idea of simultaneously forming and pouring concrete was entertained. If this were possible, not only would pouring costs be materially reduced, but also forming, scaffolding, and other attend-

26-ft pour under way.

5:15 pm All concrete in place.



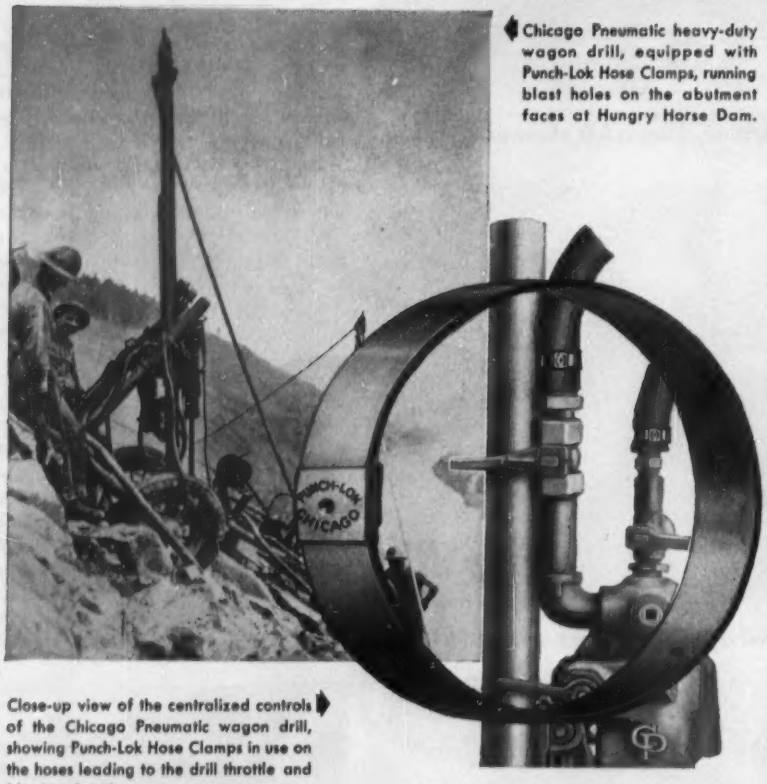
HOW the Uni-Forms were erected.

Results in Sharply Reduced Project Costs

The Perfect ANSWER FOR
ON-THE-JOB HOSE MAINTENANCE

PUNCH-LOK

HOSE CLAMPS



Chicago Pneumatic heavy-duty wagon drill, equipped with Punch-Lok Hose Clamps, running blast holes on the abutment faces at Hungry Horse Dam.

Close-up view of the centralized controls of the Chicago Pneumatic wagon drill, showing Punch-Lok Hose Clamps in use on the hoses leading to the drill throttle and blowing throttle.

With Punch-Lok Hose Clamps on the job . . . you're sure of having truly dependable hose connections. Maintenance costs are reduced because of Punch-Lok's trouble-free performance. When hose repairs are needed . . . Punch-Lok again saves you time and money. You'll be amazed to see how quickly and easily Punch-Lok Hose Clamps are applied.

See Your Near-by PUNCH-LOK Distributor

"The Sign of a Good Hose Clamp"

PUNCH-LOK Company

Dept. F, 321 North Justine St., Chicago 7, Illinois

4168

FORM AND POUR . . . Continued

ant labor costs would be sliced.

The feasibility of this plan was checked with The Universal Form Clamp Co., who were on the project and all details were coordinated.

Since the setting of the Uni-Forms for the inside face and the placement of reinforcing steel were not affected by this method, Superintendent Nigh concerned himself with planning all phases of the critical operation; namely, the outside forming and the pouring of the concrete.

For the erection of the outside Uni-Forms, he decided on a crew of 6 men, split up into two crews, each starting from the same point and working in opposite directions. Four men were assigned to handle the scaffolding, 6 to carry forms, and two pouring crews of 4 men each took care of the manpower requirements. For equipment, 2 electric vibrators were assigned with a standby unit, and 2 cranes, a Northwest Model 5 crawler, and a Michigan T6K truck crane, were scheduled.

Concrete, 275 yd, was ordered from the Albuquerque Gravel Products Plant, with delivery scheduled to start at 8:00 am on Friday, Feb 26. The first 3-ft lift of outside Uni-Forms was set on Thursday afternoon, leaving one more lift of 3-ft panels and five lifts of 4-ft panels remaining for placement during the pouring.

Almost No Finishing

The operating schedule called for 9 hr of continuous concrete placement and, with the exception of minor vibrator troubles early in the day, the integration of forming, scaffolding, and concrete pouring operations into one, was a complete success.

The result is an excellent concrete job on which practically no finishing was necessary. Absolute control over concrete placement was achieved because at no time during the pour was the concrete level more than 4 ft below the height of the outside form.

Pouring costs were slashed because of accessibility to the formwork, plus the fact that chutes and elephant trunks were not required. Scaffolding costs were less because forming and pouring operations were handled from the same scaffold, which was easily attached directly to the steel frame of the Uni-Form Panel.

Finally, the form erection costs were substantially reduced.

New RPM 10-30 Special Motor Oil can save up to ¾ gallon of gasoline in every 5 gallons you buy

Now...a motor oil so superior it can save up to ¾ gallon of gas in every 5 ...a heavy-duty motor oil so far ahead that just one grade serves all cars and light trucks, all year 'round, in all climates. Proved in the toughest stop-and-go driving, easier-starting "RPM" 10-30 Special saves you money, saves engine wear, boosts performance. Start saving today with RPM 10-30 Special Motor Oil.

CAN SAVE UP TO ¾ GALLON OF GAS IN EVERY 5—more miles per gallon in stop-and-go driving.

DESIGNED FOR OLDER CARS AS WELL AS NEW—covers all car manufacturers' motor oil recommendations.

LESS OIL CONSUMPTION—savings as high as 33% compared to light grade oils.

TOPS FOR HYDRAULIC VALVE LUBRICATION—cuts noise and sticking.

STEPPED-UP POWER—for better acceleration, more pull on hills.

EASIER STARTING—battery-saving starts in all weather.

MONEY-SAVING MOTOR PROTECTION—tops for preventing wear of critical engine parts.

ONE OIL FOR ALL PURPOSES—covers SAE grades 10W, 20W, 30; recommended for all seasons, all climates.

10-30 SPECIAL RPM MOTOR OIL

Certified

This is to certify that we have made our own investigation of RPM 10-30 Special Motor Oil. Our findings confirm the above claims regarding the qualities of "RPM" 10-30 Special.

THE TWINING LABORATORIES

By Fred W. Twining

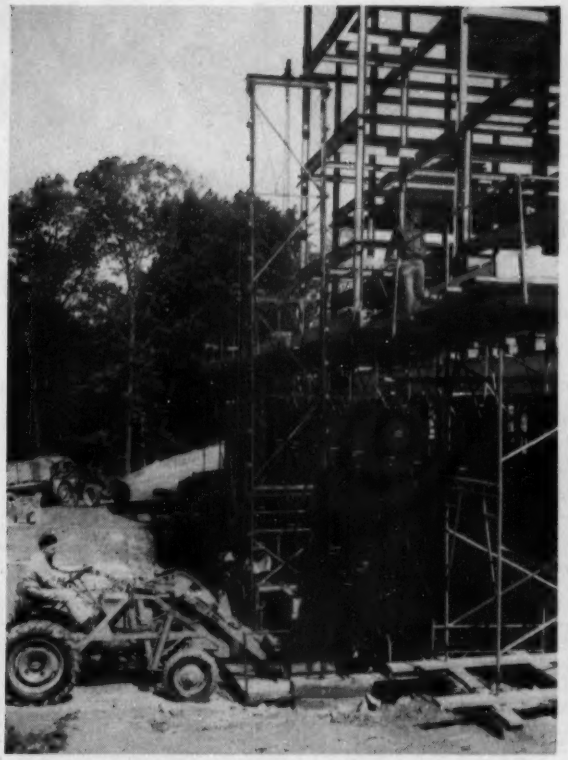
STANDARD OIL COMPANY OF CALIFORNIA, *San Francisco 20*
STANDARD OIL COMPANY OF TEXAS, *El Paso*
THE CALIFORNIA OIL COMPANY, *Barber, N. J.*
THE CALIFORNIA COMPANY, *Denver 1, Colorado*

WEST SYSTEM uses standard industrial-type rubber-tired tractors equipped with hydraulically operated front-end loader with two-pronged fork to fit standard 24x32 pallet. It's available in two sizes; one to reach up 9½ ft and the other 20 ft.

Palletized Material Handling System...

TRACTOR WITH SPECIAL FRONT-END, with only one man to operate, can unload 3,000 to 4,000 bricks in 15 min. from a truck. The tractor has a lifting capacity of 2,000 lb and is the busiest piece of equipment in the West system.

...Saves More Than 15% Masonry Cost



HERE'S THE TRACTOR again, this time placing the still undisturbed pallet on the hoist where the operator of the buggy awaits it on the scaffolding. The tractor can keep as many as 30 masons busy.

TRACTOR PLACES THE PALLET directly on to the brick buggy which completes the pallet operation. The buggy is highly maneuverable and weighs only 375 lb. It can lift a 1,000-lb load with ease.

BUGGY CAN BE EQUIPPED to lift either 10 in. or as high as 5 ft. Lifting is with a hydraulic hoist which operates with three or four quick strokes by the operator. It has brakes.

A TASK that has literally remained unchanged for thousands of years —carting masonry materials to and on the job—has been improved to the point where human effort has been drastically reduced and masonry costs cut by 15%. It's all come about as the result of a 5-yr period of planning, engineering and practical use of a system of handling palletized masonry materials originated by Stanley West, president of the newly formed West Brick Buggy Corp. 4310 Mayfield Rd., Cleveland, Ohio.

Back in 1948, West, who still heads his own highly successful mason contracting firm in Cleveland, became alarmed at the rapid and steady increase of common-labor costs, so he began seeking a plan or method where he could improve the efficiency of operations. The problem offered a challenge because he knew he could not reduce the efficiency and production of the bricklayers, and rising construction costs prevented any large outlays of cash for conversion of equipment or materials.

West experimented with various methods and equipment over the 5-yr span and now a system that bears his name, the West System—originally conceived to improve his own operation—has caught on and is in such demand that it is being made available on a rental plan.

Using his system, West on one construction project cut brick wall costs by $21 per 1,000 bricks.

In a nutshell, the West System is based on an old idea of palletization of materials, but the West idea has one important and outstanding factor. It enables the pallet-package to be transported from the manufacturing plant of origin to the construction area, through the job site, up the hoist and around the scaffold to the bricklayer's elbow without disturbing the original palletized material.

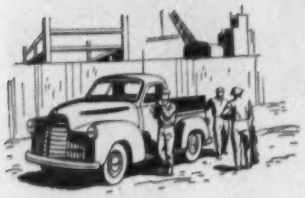
Key equipment for the system is a wooden pallet, a lightweight hand-propelled brick buggy, a hand-propelled 4-wheeled mortar box, and a specially designed front-end fork-lift attachment on a standard Case tractor.

The first problem West had to solve was to design a standard size wooden pallet small enough to be handled on a scaffold, but still large enough to handle masonry material in the exact quantity to cover a wall section 4x10 ft, generally considered the normal working area for a bricklayer. Experiments proved a wooden pallet, size 24x32 in. to be ideal. This size will hold about 240 bricks, weighing about 1,000 lb. For his own operations, West furnishes the local vendor with the pallets, specifying that the material be delivered to the job on the pallets. The cost per thousand brick is slightly higher for this service, but far less than if the brick were dumped at the job site and then restacked on the pallets.

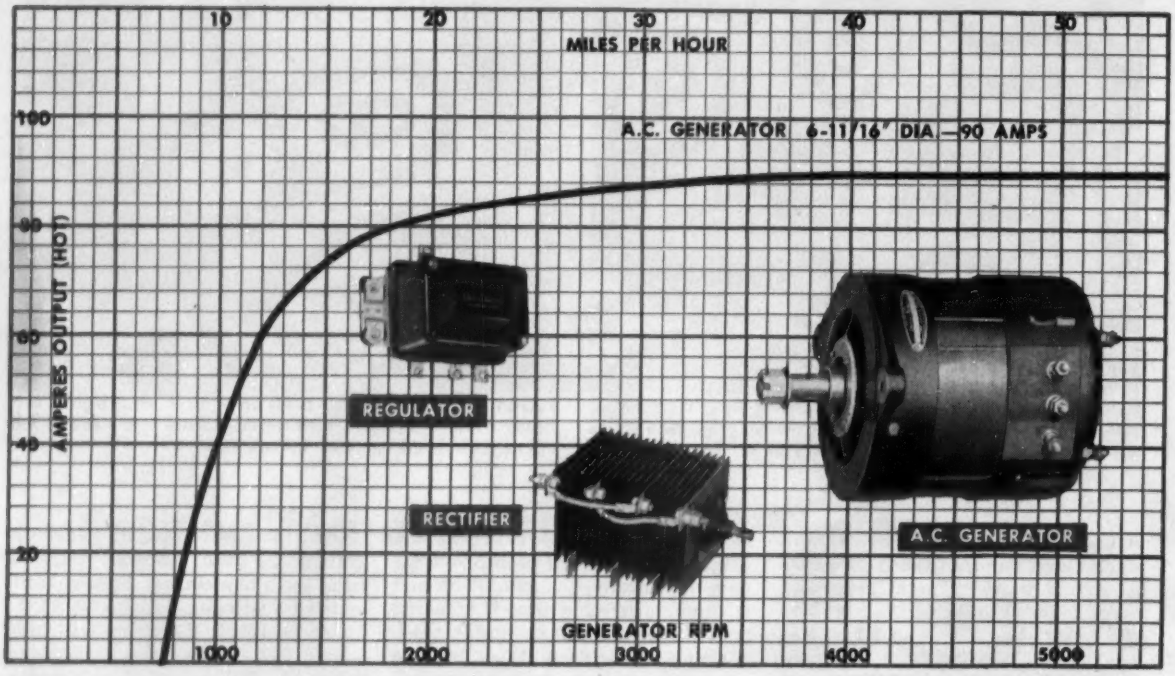
Next, was how to handle the palletized package after it arrived by truck at the job site. Once again different types of tractors and attachments were tried before adopting the standard industrial-type rubber-tired tractor. West equipped it with a hydraulically operated front-end loader and designed a two-pronged fork to fit the standard 24x32 pallet. The loader is available in two sizes; one to reach up 9½ ft and the other up to 20 ft. The tractor, using just one man to operate it, can unload 3,000 to 4,000 bricks in 15 min from

(Continued on page 94)

Power Packed and



HERE'S THE A.C. ANSWER TO EXTRA-HEAVY ELECTRICAL DEMANDS



DELCO-REMY

A. C. Generator, Regulator and Rectifier

Here's the answer for "problem" vehicles—Delco-Remy's new long-lived A.C.-D.C. charging system! It's specifically designed to meet the *extra*-heavy electrical demands of contractors' trucks and other vehicles equipped with two-way radio, floodlights or any extra electrical units . . . ample current reserve picks up discharged battery quickly in operation. Delco-Remy A.C. generators are suitable for use at all engine speeds.

With output ranging from 30-40 amperes at curb idle and up to 90 amperes at higher engine speeds, the new Delco-Remy A.C.-D.C. charging system meets all electrical needs under the toughest operating conditions. Included in the new system is the A.C. generator, a matching regulator, and a rugged, dependable dry-plate rectifier which converts generator A.C. output to direct current.

Application packages complete with installation instruction sheets for popular makes of cars and trucks are now available. The conversion job is simple. For further details and application data, see your nearest United Motors distributor.

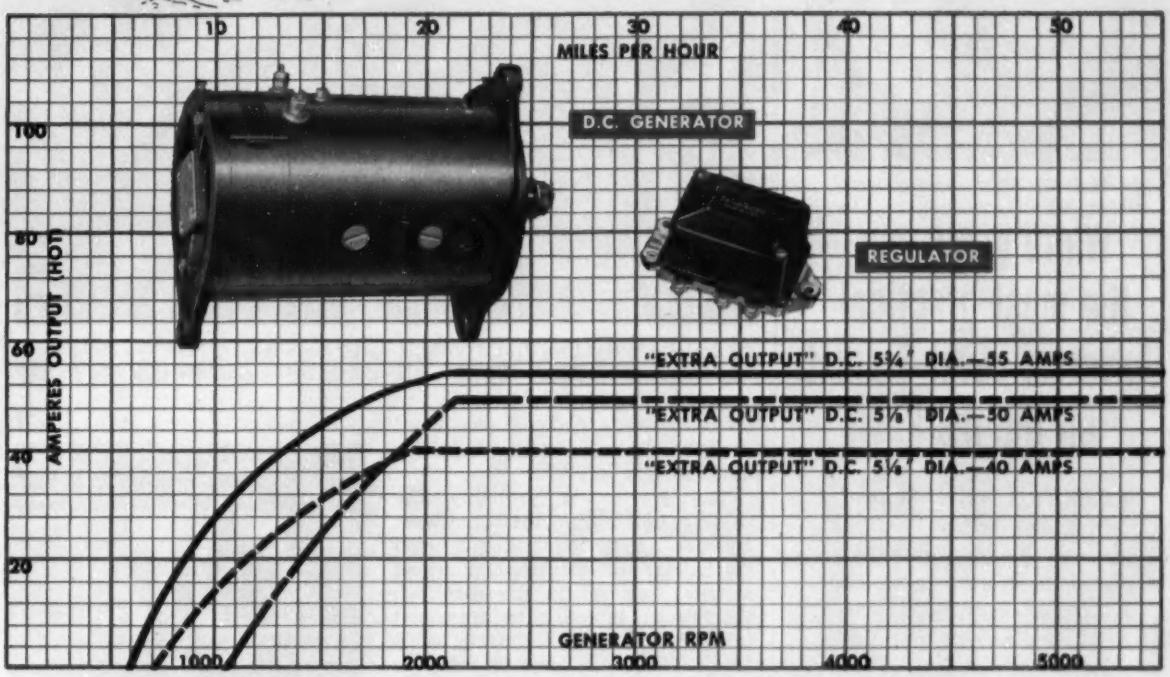
A GENERAL MOTORS PRODUCT — A UNITED MOTORS LINE

DISTRIBUTED BY WHOLESALERS EVERYWHERE

WHEREVER WHEELS TURN OR PROPELLERS SPIN

Right for the Job

HERE'S THE D.C. ANSWER TO HEAVY ELECTRICAL DEMANDS



DELCO-REMY

Extra-Output D. C. Generators and Matching Regulators

Delco-Remy extra-output D.C. generators are an economical answer to the electrical needs of contractors' pickup or panel trucks as well as other vehicles with additional lights, two-way radios, or other special electrical equipment in medium to heavy-duty service. Delco-Remy extra-output D.C. generators are low in cost, simple to install, economical to maintain.

DELCO-REMY 40-AMP GENERATOR has low cut-in, about 7 mph, charges from 11 to 17 amperes at curb idle . . . full output about 18 mph —for vehicles customarily used in heavy traffic.

DELCO-REMY 50-AMP GENERATOR has slightly higher cut-in, about 11 mph . . . full output about 21 mph—for vehicles customarily operated at higher speeds, with minimum slow driving.

DELCO-REMY 55-AMP GENERATOR has very low cut-in, about 6 mph; charges at curb idle from 20 to 30 amperes . . . attains full output at 20 to 25 mph—for vehicles customarily operated at low speeds with added electrical loads, such as contractors' field cars.

For further details and application data, see your nearest United Motors distributor.

Delco-Remy

DIVISION, GENERAL MOTORS CORPORATION, ANDERSON, INDIANA

WHEREVER WHEELS TURN OR PROPELLERS SPIN

Precision-built for the man behind the gun...

Model 3000 sold complete with tripod.

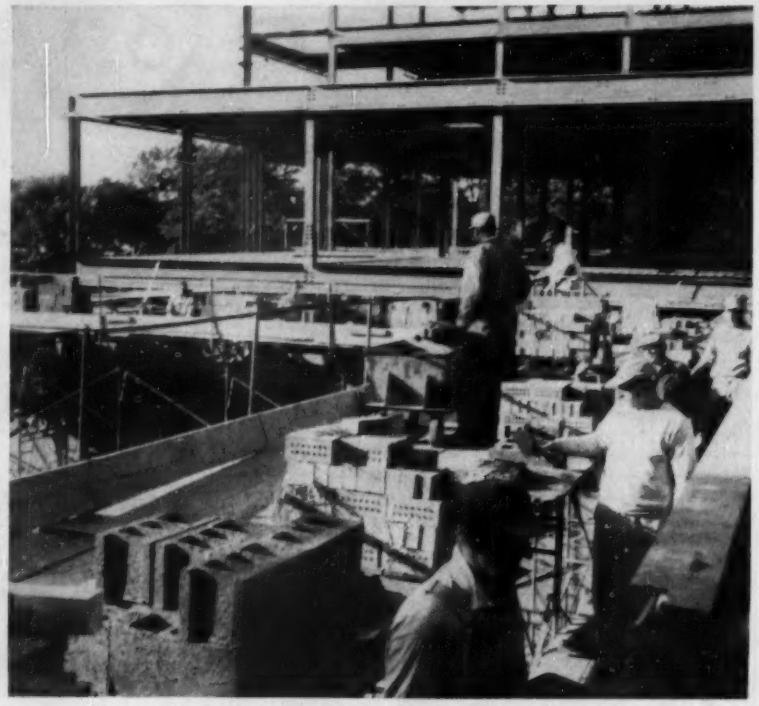
White gives you the most practical Universal Level-Transit on the market

HERE'S a Universal Level-Transit specially developed to handle all survey and checking operations. It's sturdy, accurate and exceptionally easy to use. And — a new single truss standard frame design replaces old-style cross bars and wyes. What's more, it has a silvered 4¼" horizontal circle and an easy to read 5 minute vernier.

Other advantages of this outstanding instrument include coated optics, internal focusing and a ball-bearing race for smooth operation even in sub-zero weather. Check out a White on your next trip and discover how much easier your work can be. Write for DAVID WHITE Bulletin 1053 and name of nearest dealer, 343 W. Court St,. Milwaukee 12, Wis.

DAVID WHITE COMPANY

We offer expert REPAIR SERVICE on all makes, all types of instruments



TO COMPLETE THE UNUSUAL SYSTEM, a mortar box with four wheels, two of them castered, was designed. This portable box will hold the entire discharge of a 6-cu ft mixer.

a truck. It has a lifting capacity of 2,000 lb.

The tractor is probably the busiest of all equipment in the West System. Experience has proved the tractor and operator can unload a truck, stock-pile the material, then with laborers to transport mortar, brick and tile from stock pile to hoist, can keep as many as 30 masons busy.

The most important piece of equipment is the brick buggy which completes the pallet operation over lightweight temporary construction floor and scaffold, directly to the point of ultimate consumption which is the bricklayer.

Once the palletized material has been placed on the hoist or on the scaffolding, the average palletized operation up to this time loses its efficiency, without the brick buggy, because a conventional wheelbarrow or hand operation must be resorted to. Depending on the height of the working level, the brick buggy takes over to deliver the material to the point where it is needed and within easy reach of the bricklayer. The buggy is a highly maneuverable three-wheel, pneumatic-tired unit weighing less than 375 lb. It can pivot in its own length, pick up a 1,000-lb load in 3 sec and pushes easier than a loaded wheelbarrow.

TO MANEUVER the West brick buggy the scaffold deck needs to be 9 ft 6 in. wide. Suspended scaffolding can also be used.

Two steel fork tines lift the pallet of material with a hydraulic hoist which is operated by three or four quick strokes by the operator. The load can be lowered by a conventional release valve. The buggy is equipped with brakes for control on declines, and is available with a 10-in. or 5-ft. lift.

To complete the West System, a

(Continued on page 96)

Service lines go in fast with the new Ottawa backhoe on one end of the MM UTIL Wheeler and heavy-duty loader on the other. Unit trenches, loads, backfills and levels.

Speed service-line trenching with a cost-cutter on each end

Heavy-duty trenching for utility service lines becomes a faster, lower-cost job with this new Ottawa backhoe on one end of a Minneapolis-Moline Wheeler and loader on the other.

This Wheeler backhoe unit digs clean, square trenches, ditches and footings to a 9 ft. depth, offers bucket widths to 36″. Backhoe reaches 15′4″ for digging, 8′3″ for dumping into highest trucks. Loader backfills and levels to complete the job with cost-cutting speed.

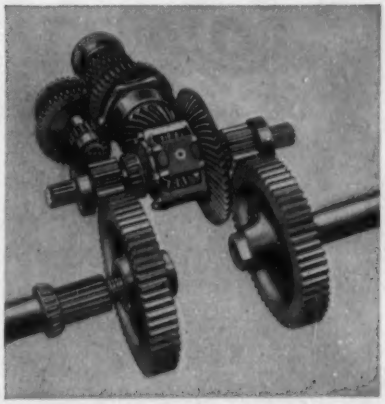
A complete line of unitized attachments makes full use of extra Wheeler power, greater Wheeler torque at moderate engine speed. Attachments include forks for loading and hauling, lifting cranes, excavating and loading buckets, dozer blades, scrapers, winches, snowplows, material handling and maintenance equipment for construction, mining, all industry.

With "high turbulence" gasoline or "turbo-cell" diesel engines, MM Wheelers deliver full-rated power, extra-heavy construction that pays off in longer unit life.

Before you buy any loader, see your Minneapolis-Moline dealer-distributor. Have him demonstrate to you that low-cost Wheelers will *return* your money *sooner*, *pay* you *longer*.

MINNEAPOLIS-MOLINE

MINNEAPOLIS 1, MINNESOTA



UTIL Wheelers pay you in longer tractor life with heavier construction, live rear axles 3 inches in diameter, bull gear final drive, greater bearing surfaces. Transmission and differential operate in a constant oil bath.

Mowing around job sites, along highways, in plant yards is a low-cost operation with this flexible hydraulic drive mower mounted on the 30 hp. RTI Wheeler.

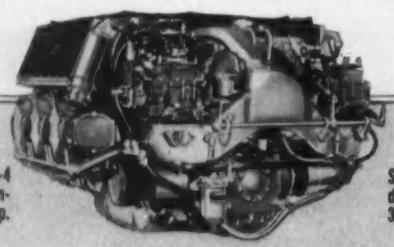
This Wheeler and hydraulically-controlled scraper offer leveling accuracy in a low-cost package. Heavy-duty 3-point hitch controls scraping depth, provides rigid mounting.

SPEAKING OF HORSEPOWER...

. . . whether you need TWO or A THOUSAND, there's a Continental Red Seal Ⓣ model Engineered and Built for Your Job

Now that the military models developed jointly with Army Ordnance are available for civilian uses, you can get Continental power for commercial applications at just about every power level from a lawnmower up to a tank. These air-cooled military series, from 375 to more than 1,000 horsepower, have been thoroughly proven under combat conditions. Their high power-weight ratio, ease of maintenance, and stamina for sustained peak loads suggest their special suitability for many jobs in the industrial field . . . Inquiries are invited.

PARTS AND SERVICE COAST TO COAST



Continental A0895-4 Air-Cooled 6-Cylinder Engine, 375 h.p.

Supercharged version, designated as A0895-3, develops 500 h.p.

1819 BROADWAY, NEW YORK 23, NEW YORK • 1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA. • 6218 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIF. • 810 S. BOSTON ST., ROOM 1008, TULSA, OKLA.

Continental Motors Corporation
MUSKEGON, MICHIGAN

PALLETIZING SAVES . . .

Continued from page 94

mortar box with four wheels, two rigid and two swivel castered, was engineered. This portable box holds the entire discharge of a 6-cu ft mixer, thereby eliminating the mortar box, and is used to replenish the supply of mortar for each bricklayer. It, too, is hand-propelled.

Wider Scaffold Needed

To provide adequate room to maneuver the brick buggies, the scaffold deck should be about 9 ft 6 in. wide at the working level. West claims this can be accomplished with present scaffold components which are available and can be leased. Suspended scaffolding can also be adapted to accommodate the buggies. No special planking is needed.

According to West, the extra expense for the scaffolding modification is slight in comparison with the over-all savings effected.

Probably the biggest attraction of the West System is the low outlay of cash required to put it into operation. You can either lease or purchase outright the modified tractor.

Pallets are available from local sources and can also be purchased from West. The Brick Buggy and Mortar Buggy are available for lease.

The West System has been used on a wide range of all types of industrial and commercial projects. The West Masonry organization does not operate in the housing field, but believes its system has a good potential in the multiple housing field.

At any rate, Stanley West, with his ingenuity in perfecting his system, has opened up a new horizon of opportunity for some important gains in the masonry field that will be keenly watched, now that the plan has been made available to all contractors.

COMING — In July

Construction Methods and Equipment's special issue devoted to Construction Equipment Maintenance. The theme will be "Productive Maintenance."

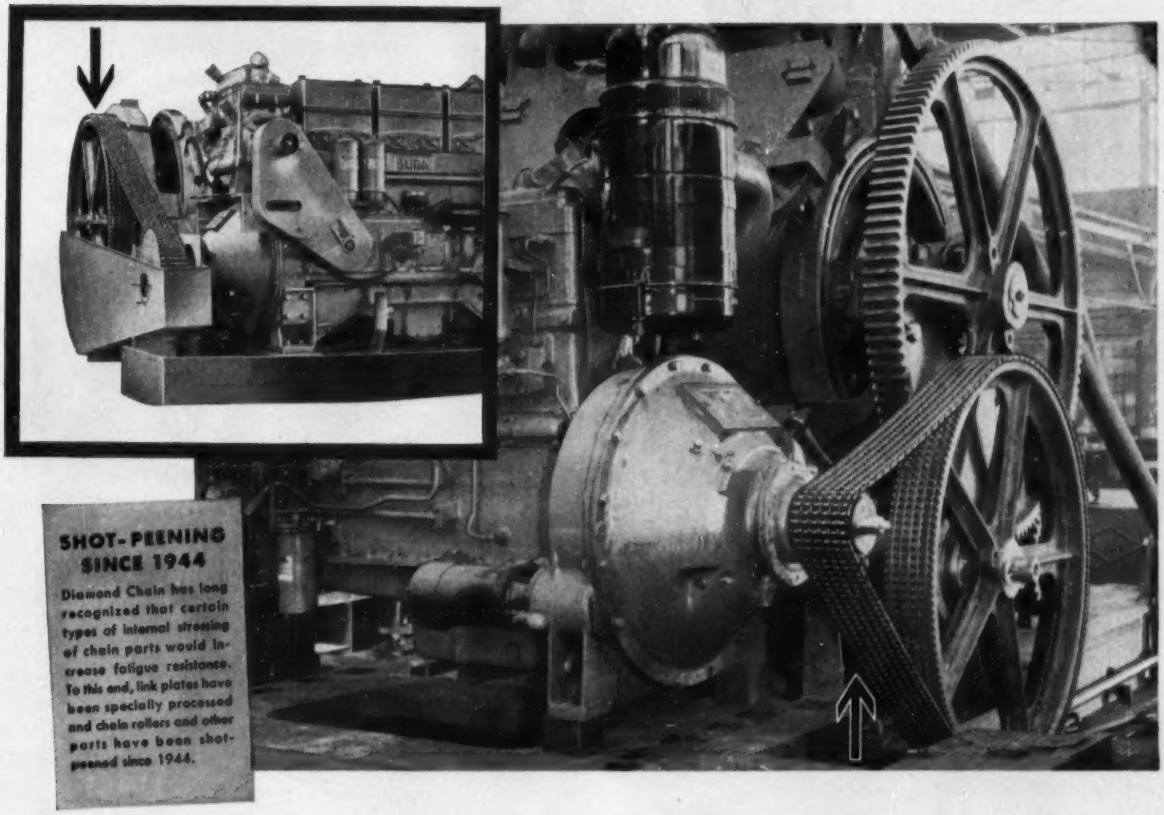
WATCH FOR IT!

They have the Stamina for Power Take-Off Drives

Diamond Roller Chains

Provide Long-Life Dependable Performance . . .

No Slip or Stretch . . . 98-99% Maintained Efficiency



SHOT-PEENING SINCE 1944

Diamond Chain has long recognized that certain types of internal stressing of chain parts would increase fatigue resistance. To this end, link plates have been specially processed and chain rollers and other parts have been shot-peened since 1944.

• Diamond Roller Chains cut maintenance and adjustment costs. The toughened side plates of great reserve strength take the shock loads and tension;—the hardened finished surfaces of the rollers, bushings and pins resist wear for longer useful life. At high, medium or slow speeds, operation is smooth and quiet with exact speed ratio maintained.

DIAMOND CHAIN COMPANY, Inc.

Where High Quality is Traditional

Dept. 418, 420 Kentucky Ave., Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

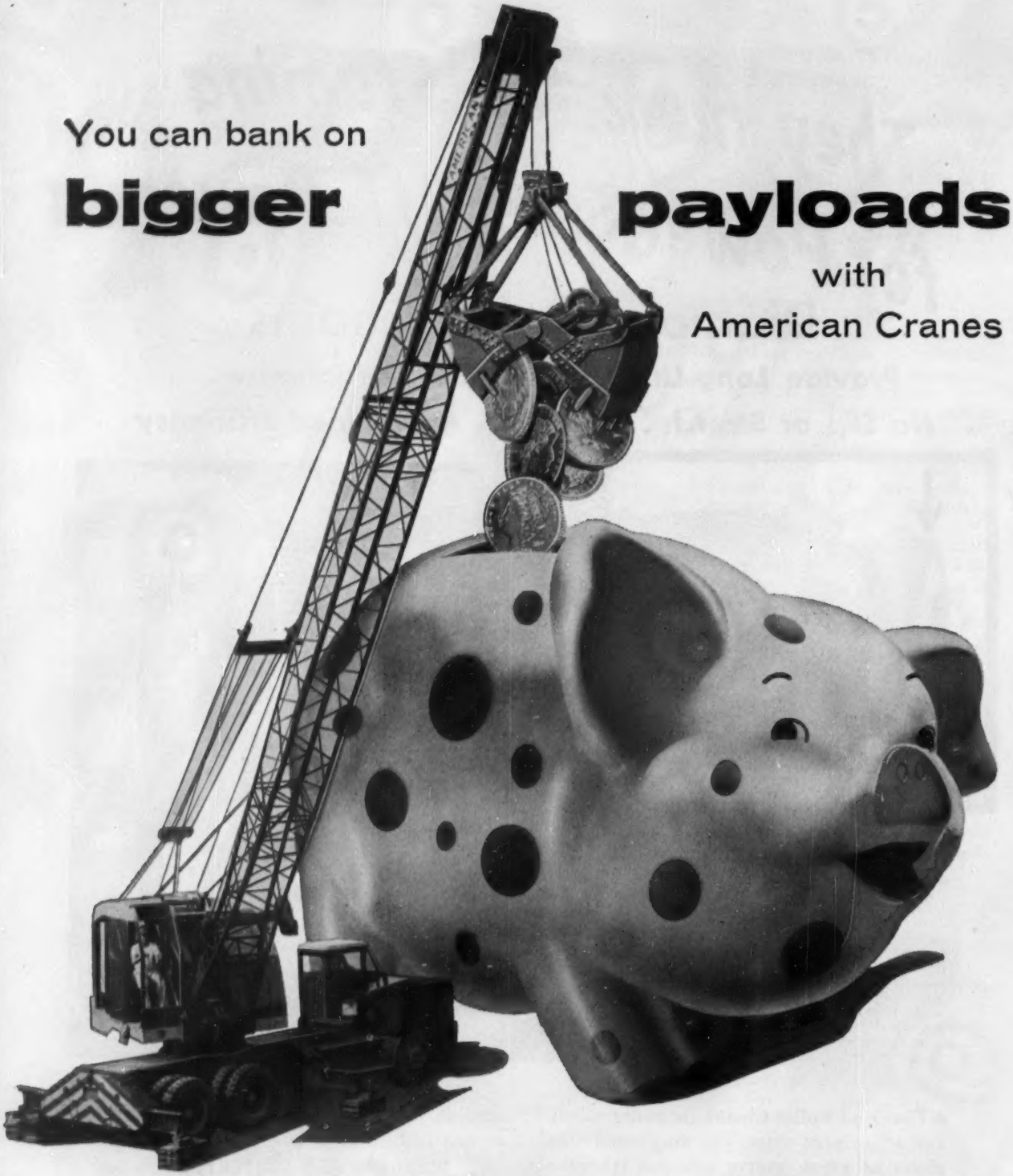
Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

You can bank on

bigger payloads

with

American Cranes



The BIG CAPACITY American 375 and 750 mean BIG PAY LOADS! Fast, smooth operating American cranes handle full capacity loads, *load after load* to boost production, increase profits!

It'll pay you to find out about the American 375 crawler or truck crane and the American 750 crawler. Available as a crane, shovel, backhoe, clam, drag or magnet crane. Write or call your distributor for complete details.

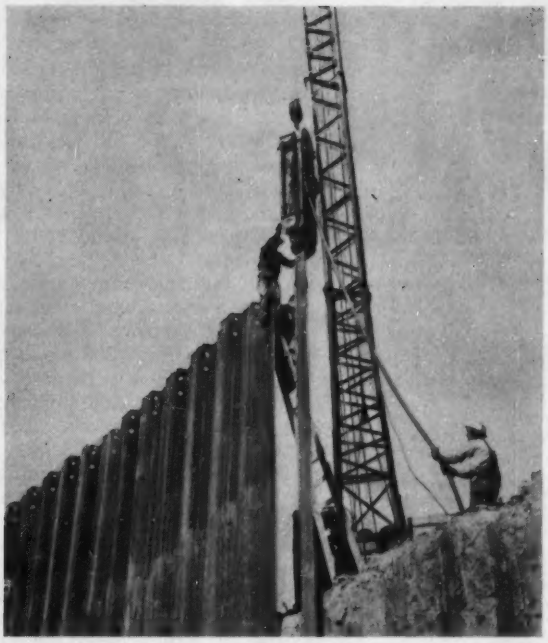
American Hoist

American Hoist & Derrick Co.
St. Paul 1, Minnesota

MANUFACTURERS OF:

Crawler and Truck Cranes • Steel Derricks • Crosby Blocks • Sheaves • Locomotive Cranes • Hoists
Portable Material Elevators • Genuine Crosby Clips • Revolver Cranes • Utility Hoist

Re-Rigged Hammer Pulls Sheetpiles Easily

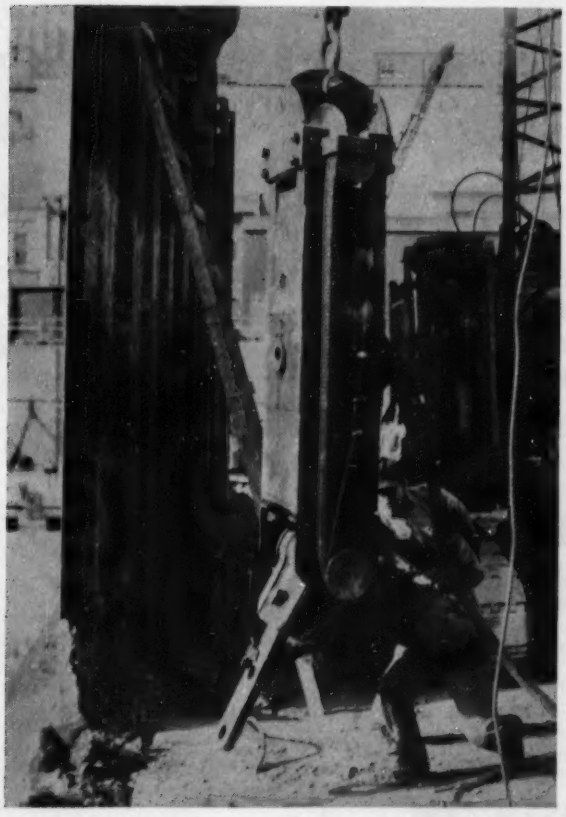


STEEL SHEETPILING is pulled by Koehring 304 crane whose 65-ft boom suspends inverted hammer from four-part line. Crane stays safely behind sheeting so as not to overload the unprotected bank.

STEEL SHEETPILING—some 20,000 sq ft of it—encloses and protects the nearly block-square foundation excavation for the new Dallas Statler Hotel. All of the sheeting will be pulled when general contractor Robert E. McKee has brought the 18-story reinforced-concrete structure up out of the hole. But a preview of that operation was performed recently when piling subcontractor Leston Watson extracted a short line of the sheeting there with an inverted McKiernan-Terry No. 7 hammer rigged in an unusual fashion.

The sheeting was pulled after McKee also was awarded the contract for a new Dallas Public Library, which will fill out the remainder of the block occupied by the Statler. By pulling the piles previously driven on the common lot line under the earlier hotel contract, excavation for the library was simplified and construction of both buildings was expedited.

The Z-shape sheetpiles, supplied by L. B. Foster Co., were Belgian BZ-1R (a 15½-in. section weighing 34.4 lb per lin ft) and British EZ-2 (a 13¾-in. section



MULTIPLE-CABLE SUSPENDERS connect bar anvil and yoke pin of inverted No. 7 hammer that extracts piles. Free ends of the equalized cable are tied off to standing parts with three Crosby clips.

HELPING HAND is lent by Link Belt Speeder LS-71 hoe that removes berm left on first-awarded of two adjacent jobs. At rear is oil-fired 40-hp Lookout boiler that supplies steam to extractor.

THE NEW M·S·A FIRST AID KIT IS DIFFERENT... BECAUSE OF

IMPORTANT LITTLE THINGS LIKE THIS

Open lid serves as shelf when kit is mounted on wall or vehicle
Clear, concise, first aid instructions
Easy-to-keep-clean case
Wall mounting brackets
Dust and moisture proof rubber gasket
Packages extend above case for easy removal
Easy-to-read identifications

Here's a First Aid Kit that gives you the important *extras* in quality and performance. A few of the important case design and construction features which serve your needs better are illustrated above. And that's only part of the New M.S.A. First Aid Kit story. Quality control, and improved first aid materials are other important improvements that add up to the big difference!

So you can be sure of freshness, purity and sterility, every Unit "D" package is stamped with a Quality Control number. This number identifies the "pedigree" clear back through our every operation.

Our modernization program extends to first aid materials. Color keying of labels for antiseptics, burn treatments, and others assure quick identification. Swabs have gauze tips which are less absorbent, assure maximum utilization of antiseptic.

And there's more, lots more. Get the facts today. Write for our bulletin.

MSA
SAFETY EQUIPMENT HEADQUARTERS

MINE SAFETY APPLIANCES COMPANY
201 North Braddock Avenue, Pittsburgh 8, Pa.

At Your Service: 82 Branch Offices in the United States and Canada

Keeps Machines Running Longer

MARQUETTE No. 550 HARD ROD

This tough-hard, wear-resistant rod adds as much as *5 times more life* to built-up parts! Designed to fight wear where earth and sand abrasion are severest . . . and it's easy to apply. Smooth durable deposit, free from cracks and porosity, *keeps* machines on the *job!*

For high-tensile strength on all repair and maintenance jobs use Marquette No. 130 Red-Rod, unequaled for easy operation in all positions.

MARQUETTE
MANUFACTURING CO., INC.
307 E. Hennepin, Dept. CM, Minneapolis 14, Minn.

HAMMER PULLS . . . Continued

weighing 31.7 lb per lin ft). Watson had driven the piles through a hard caliche clay with a McKiernan-Terry 9-B-3 hammer, and pulled them with an inverted No. 7 slung from a crane. This extraction method is old stuff, of course, but Watson has added some improvements.

Atop the inverted hammer is bolted a heavy arched steel frame with a hole for the crane shackle. Within the frame, a loose bar anvil of tough alloy steel rests across the hammer's regular flat anvil block and extends out opposite sides. A somewhat similar round bar extends through two frames bolted to the hammer tie rods at the bottom. To tie top and bottom bars together, five wraps (ten parts) of ¾-in. 6x19 wire rope at each end act as side straps. A steel plate yoke, carrying pinned pile clamps is free to turn around the lower bar, thus giving a swivel action that makes it easy to lay extracted piles down exactly as wanted.

Fire Hazards ... You Can Minimize Them

FIRE LOSSES on construction jobs are preventable. It takes only common sense, along with some fire extinguishers and a few preventive steps to avert the blazes that happen on so many jobs from the following sources:

1. Accumulations of debris caused by failure to keep the site cleaned up.
2. Electrical hazards—faulty circuits, overloads, and short circuits.
3. Temporary or permanent heating, such as salamanders, oil or kerosene heaters, stoves.
4. Accumulations of flammable materials, like tarpaulin enclosures, sawdust in electric motors, oil and gasoline.
5. Sparks in combustible atmospheres, tanks and places where flammable materials, including welding gases have accumulated.
6. Hot exhaust from vehicles and equipment on dry grass or near other natural or stored or erected combustibles.
7. Uncontrolled or careless use of cigarettes or matches.
8. Welding operations.

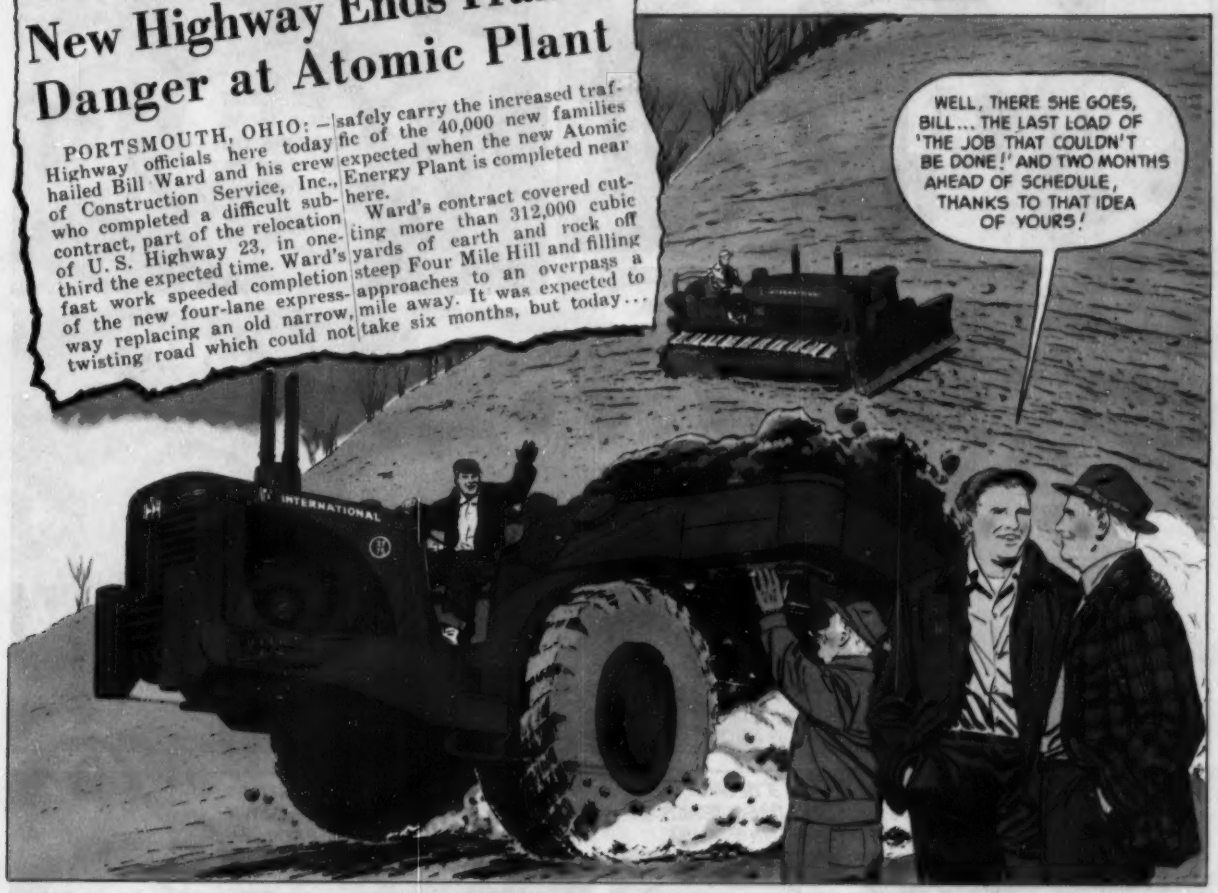
Wins Race With Time And Death

An Actual Job Report from

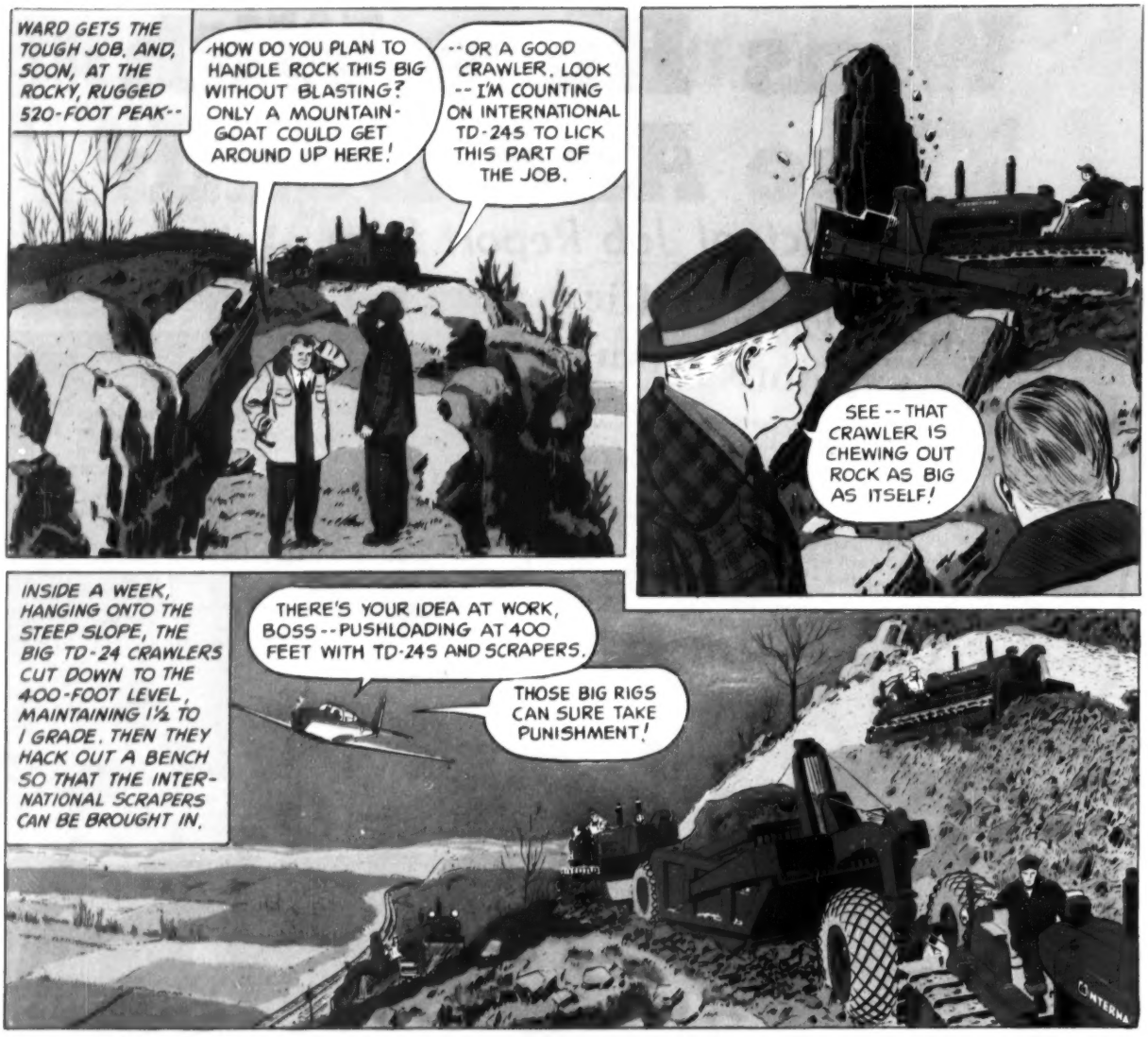
New Highway Ends Traffic Danger at Atomic Plant

PORTSMOUTH, OHIO: — Highway officials here today hailed Bill Ward and his crew of Construction Service, Inc., who completed a difficult subcontract, part of the relocation of U. S. Highway 23, in one-third the expected time. Ward's fast work speeded completion of the new four-lane expressway replacing an old narrow, twisting road which could not safely carry the increased traffic of the 40,000 new families expected when the new Atomic Energy Plant is completed near here.

Ward's contract covered cutting more than 312,000 cubic yards of earth and rock off steep Four Mile Hill and filling approaches to an overpass a mile away. It was expected to take six months, but today...


WELL, THERE SHE GOES, BILL... THE LAST LOAD OF 'THE JOB THAT COULDN'T BE DONE!' AND TWO MONTHS AHEAD OF SCHEDULE, THANKS TO THAT IDEA OF YOURS!
INTERNATIONAL

THIS 'HAPPY ENDING' HAD ITS BEGINNING MONTHS EARLIER. BILL WAS REALLY 'UP IN THE AIR' IN THOSE DAYS (WITH HIS PILOT AT THE CONTROLS)... MAKING AN AERIAL SURVEY BEFORE SUBMITTING HIS BID ON THE TOUGHEST SUB-CONTRACT OF THE WHOLE JOB...
--BUT, BILL, ALL THE OTHER BIDDERS ARE FIGURING ON USING DYNAMITE AND POWER SHOVELS... AND QUOTING SIX MONTHS!
I KNOW, JACK, BUT I'M QUOTING FOUR MONTHS! I'VE GOT AN IDEA... A FASTER, CHEAPER WAY. LISTEN--


WARD GETS THE TOUGH JOB. AND, SOON, AT THE ROCKY, RUGGED 520-FOOT PEAK--
HOW DO YOU PLAN TO HANDLE ROCK THIS BIG WITHOUT BLASTING? ONLY A MOUNTAIN-GOAT COULD GET AROUND UP HERE!
--OR A GOOD CRAWLER. LOOK -- I'M COUNTING ON INTERNATIONAL TD-24S TO LICK THIS PART OF THE JOB.
SEE -- THAT CRAWLER IS CHEWING OUT ROCK AS BIG AS ITSELF!
INSIDE A WEEK, HANGING ONTO THE STEEP SLOPE, THE BIG TD-24 CRAWLERS CUT DOWN TO THE 400-FOOT LEVEL, MAINTAINING 1½ TO 1 GRADE. THEN THEY HACK OUT A BENCH SO THAT THE INTERNATIONAL SCRAPERS CAN BE BROUGHT IN.
THERE'S YOUR IDEA AT WORK, BOSS -- PUSHLOADING AT 400 FEET WITH TD-24S AND SCRAPERS.
THOSE BIG RIGS CAN SURE TAKE PUNISHMENT!
INTERNA
AT 300 FEET, THE GRADE LESSENS. PHASE 3 BEGINS. NOW, INTERNATIONAL TWO-WHEELED, RUBBER-TIRED TRACTORS AND SCRAPERS TAKE OVER, AND THE CUTTING AND CARRYING REALLY SPEEDS UP...
WE'RE REALLY ROLLING, BOSS... AND THOSE INTERNATIONALS ARE GAINING A LOAD AN HOUR ON OUR OTHER RIGS!
GREAT, ED. IT LOOKS AS THOUGH WE'RE IN -- BUT KEEP PUSHING!
IT'S A MILE HAUL FROM THE CUT TO THE FILL FOR THE OVERPASS -- DOWN-HILL LOADED AND UPHILL BACK -- AND A RAILROAD CROSSING EACH WAY!

COPYRIGHT 1954, PICTORIAL MEDIA, INC.

UNEXPECTEDLY, TRAFFIC ON THE RAILROAD DOUBLES... JUST AS THE FAST INTERNATIONAL RUBBER-TIRED RIGS START THE OVERPASS-FILL ON THE OTHER SIDE OF THE TRACKS!
LOOK AT THAT... THE 18TH LONG COAL TRAIN TODAY! AND, YESTERDAY, THEY COST US 2½ HOURS--
I DIDN'T FIGURE THIS IN MY BID. BUT THOSE INTERNATIONALS HAVE PUT US WAY AHEAD.

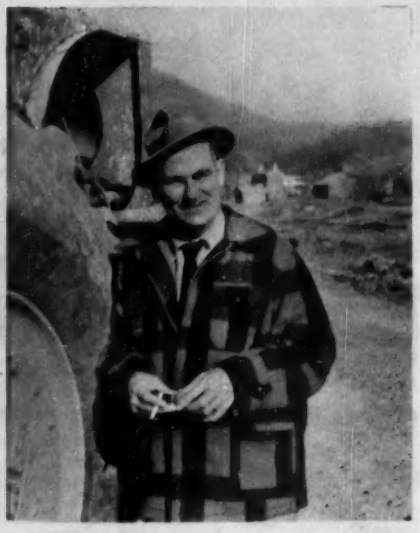
ONE MIDNIGHT, AS THE JOB GOES INTO THE 'HOME-STRETCH'...
GOT TROUBLE, SHORTY?
NO TROUBLE, BOSS, JUST REGULAR GREASIN'. STILL NO DOWNTIME ON THIS JOB!

AND THEN THE WARD OUTFIT SETS ANOTHER RECORD, IN SPITE OF THE TRAINS... 8,400 CUBIC YARDS MOVED IN 9 HOURS ON AN 8,000-FOOT CYCLE, USING 7 HAUL UNITS! TWO MONTHS FROM THE STARTING DATE, THE JOB IS FINISHED, AND...

HALF THE FIGURED TIME, MR. WARD! ON THIS JOB, WHEN YOU SAVED DAYS, YOU SAVED LIVES, TOO!
IT WAS PART LUCK, ALL RIGHT... BUT I GIVE THAT CREW OF MINE GOOD EQUIPMENT, AND THEY MAKE THEIR OWN BREAKS!

Head in the clouds, feet on the ground

BILL WARD, owner of the Construction Service, Inc., Ludlow, Kentucky, is a man with his head in the clouds... but only when he's making an aerial survey of a prospective job in his four-place Navion plane. The rest of the time his feet are very firmly planted on the ground, when it comes to getting things done in the contracting business.



Starting as a shovel runner in New England for B. Perini & Sons, Inc., Framingham, Mass., Bill worked up to superintendent. In 1945 he realized an 18 year ambition by going into business for himself with a single power shovel. On the Four Mile Hill subcontract he used 20 big pieces of earth-moving equipment, including six INTERNATIONAL crawlers with matched INTERNATIONAL dozers, two INTERNATIONAL B-170 scrapers, and three INTERNATIONAL two-wheeled, rubber-tired tractors and scrapers.

He's proudest of the fact that he won the 1952 Safety Award given by the West Virginia chapter of the A.G.C. Association in the 10-20,000 man hours per year class for not having a single lost time accident. In 1953 he again finished out the year with a similar safety record. That's a real tribute to Ward, his men, and his big red INTERNATIONAL Power!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL **POWER THAT PAYS**

Now All in One Family

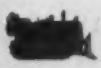
The hardest-working work teams in the world!

TD-24 crawler with matched scrapers

TD-18A crawler with matched scrapers

TD-24 crawler with bullgrader

T-9 and TD-9 crawler with hydraulic bulldozer



T-6 and TD-6 crawler with hydraulic bulldozer

TD-14A crawler with cable bullgrader

TD-9 tractor with front-end loader

TD-18A crawler with sideboom

Model 2T-75 two-wheel, rubber-tired tractor with 18 heaped-yard capacity scraper

Model 2T-75 two-wheel, rubber-tired tractor with 20 heaped-yard capacity bottom dump wagon

Model 2T-55 two-wheel, rubber-tired tractor with 13 heaped-yard capacity scraper

CR-610-D 2/28 LITHOGRAPHED IN UNITED STATES OF AMERICA

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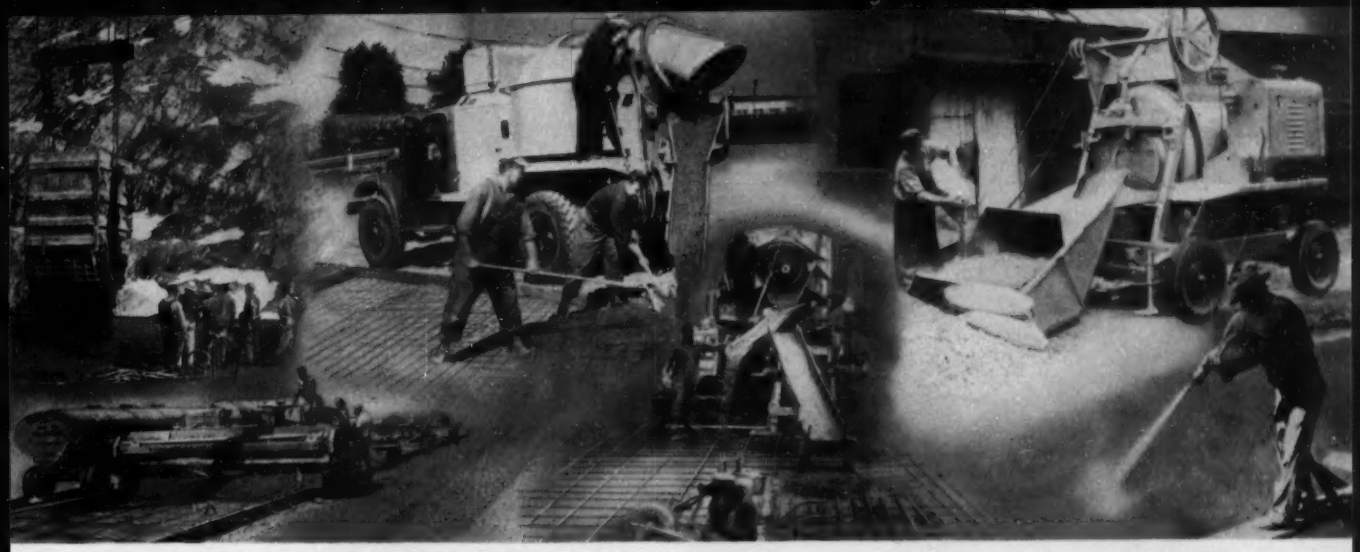


6b. Permanent Plant Facilities

By THEODORE B. APPEL, Jr., Chief Engineer, The C. S. Johnson Co., Subsidiary Koehring Co.

Aggregate Storage

THE SIMPLEST STORAGE of aggregates is that of the kidney-shaped piles which normally surround a crane equipped with a clamshell bucket in the typical roadbuilder's plant. Kidney-shaped piles also may be built up through the use of a radial stacker *(Fig. 3)*. This arrangement is more economical than a crane and clamshell both in purchase price and operating cost. It is common to separate various sizes of aggregates by the use of bulkheads. These bulkheads generally are made of concrete and are merely concrete retaining walls.

A stock pile with its peak on a radius, as produced by a radial stacker, does not lend itself to reclaiming by a belt conveyor in a tunnel as well as a stock pile which is in a straight line. On the other hand, a stock pile in a straight line requires more expensive equipment for placing the material in the pile. One of the most effective means is to use a shuttle conveyor. This is a conveyor with a reversible belt that can be moved along a track on a bridge above the stock pile.

In *Fig. 4* (p. 106) material to be placed in storage is carried up the inclined conveyor and transferred to the shuttle conveyor. When the shuttle conveyor is in the solid line

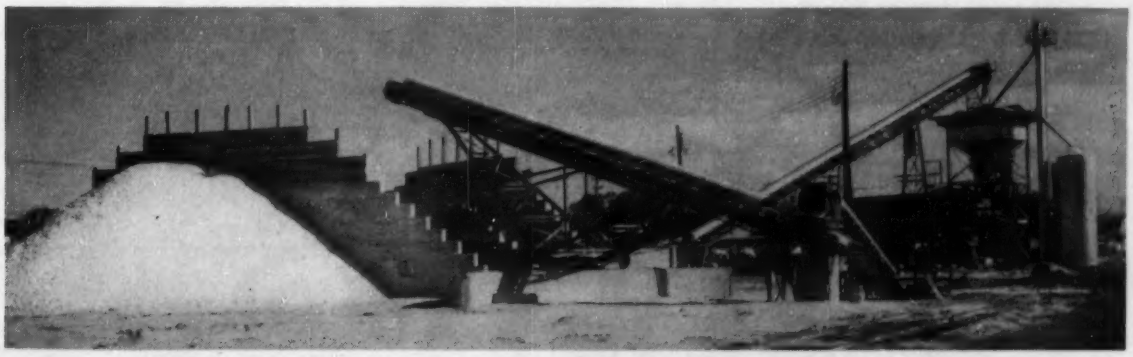
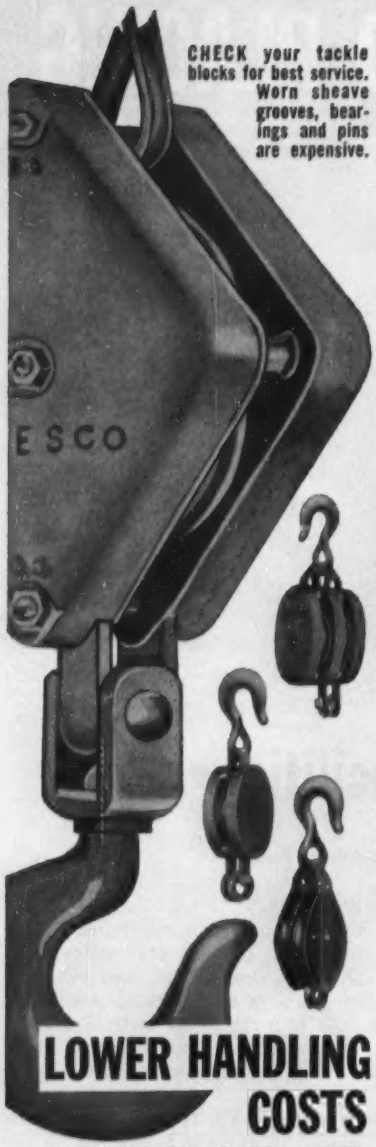


Fig. 3 ... BULKHEADS SEPARATE various sizes of aggregates stock-piled by this radial stacker. The stacker is more economical than a crane and clamshell combination, both in purchase and operating costs, makes kidney-shaped piles.



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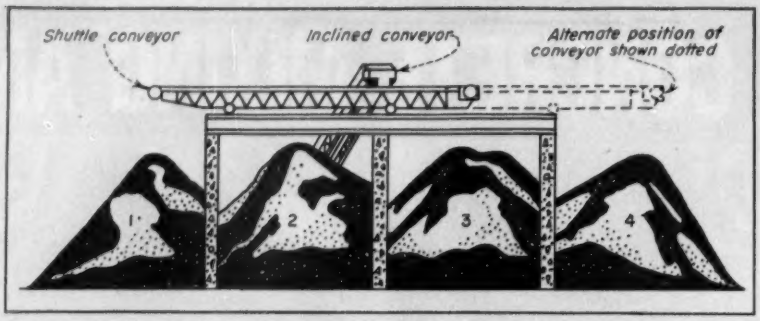

Fig. 4 . . . SHUTTLE CONVEYOR stock-piles material in a straight line, has reversing belt, and conveyor can be moved along a bridge above the piles to unload into various bunkers.

position, material will be discharged in bunker No. 1 if belt travel is toward the left, and in bunker No. 3 if belt travel is toward the right. If the shuttle conveyor is in the dotted line position, the material will be discharged in bunker No. 2 or bunker No. 4.

This arrangement, since the shuttle conveyor can be tailored to fit most any stock pile, lends itself well for use in almost any number of circumstances. The height and length of pile can be selected to fit the space available and the amount of material to be held in storage. A suitable shuttle conveyor can then be selected.

If the storage pile is to be a large one, the bridge for the shuttle conveyor will have to be carried on sturdy steel towers. These towers must be stout enough to resist the lateral thrust of the pile of material against them which, in case of an unbalance, can be a considerable force.

For relatively low stock piles and stock piles containing not too great a quantity of material, it is recommended that bulkheads be provided to separate one material from another. The shuttle conveyor can be supported on the top of these walls, as shown in *Fig. 4*.

Fig. 5 shows the capacity of stock piles of varying heights and lengths. The information contained there can be used to estimate roughly the storage in kidney-shaped stock piles. In this case the length of the circular arc will be the value A of the tables.

Fig. 5 also shows the percentage or amount of material which can be considered to be live storage. This is dependent on the spacing of the reclaiming gates in the roof of the tunnel under the stock pile. These figures on live storage can therefore apply only to the spacing of gates assumed. However, approximations for other gate spac-

(Continued on page 108)

SAND AND GRAVEL STOCKPILES - APPROXIMATE TONNAGES

Stockpile Dimensions - Feet					Storage Per 20-ft. Bay		Storage Each End Bay	
H	A	B	C	W	Total Tons	Live Tons	Total Tons	Live Tons
10	4.12	5.88	11.76	28.6	143	44	125	39
15	6.18	8.82	17.64	42.6	332	117	347	107
20	8.24	11.76	23.52	56.9	572	219	716	214
25	10.30	14.70	29.40	71.2	895	350	1290	351
30	12.36	17.64	35.28	85.5	1287	513	2094	572
35	14.42	20.58	41.16	99.8	1750	705	3175	837
40	16.48	23.52	47.04	114.1	2290	925	458*	1170

Live storage based on locating reclaiming gates on 10-ft. centers.

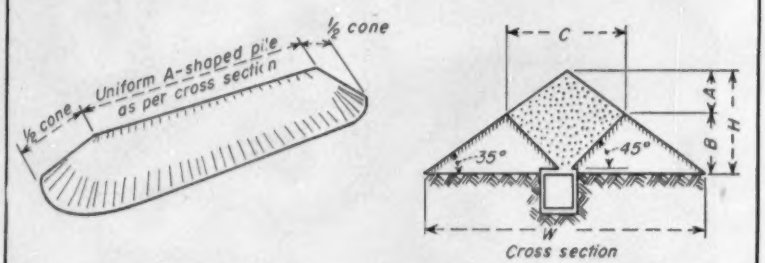

Fig. 5 . . . APPROXIMATE TONNAGES in stock piles can be estimated by following convenient table and sketches. Shown is amount of live storage reclaimable by conveyor in tunnel.

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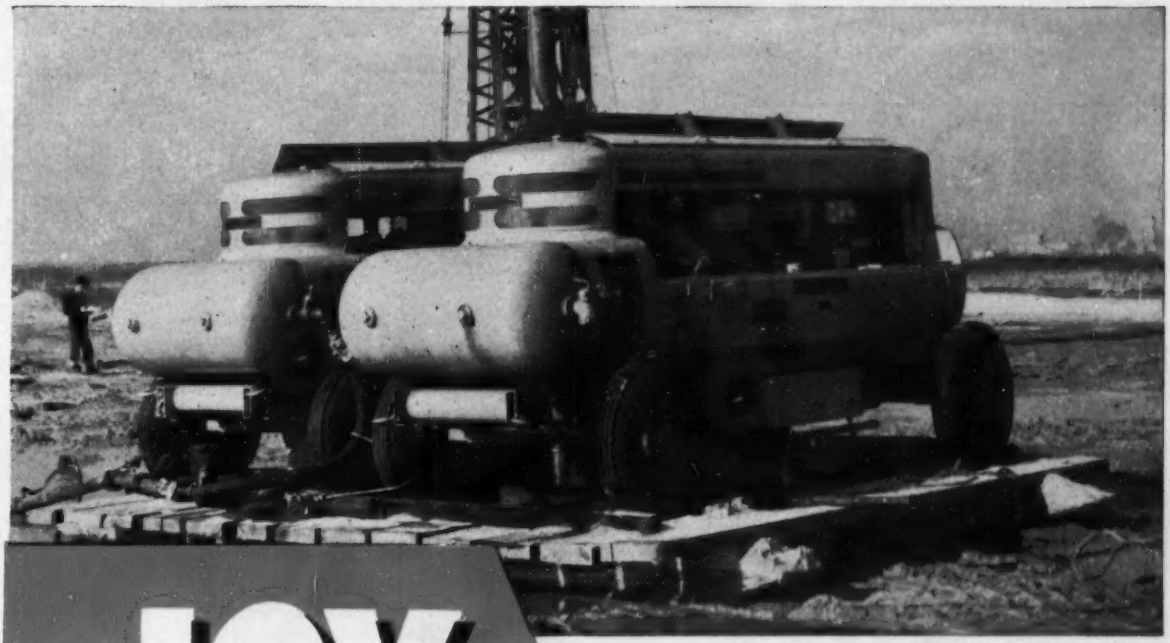

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CONSTRUCTION EQUIPMENT MANUFACTURERS FOR OVER HALF A CENTURY

ings can readily be made from the figures contained in the tables.

If aggregate is delivered to a plant under relatively rigid specifications, particularly as to grading, the plant owner must handle this material so that it is not damaged and so that the effort made in procuring the best of materials does not go for naught. If allowed to segregate, and if there is considerable breakage due to handling, material throughout the stock pile will lack uniformity. If the material in the stock pile is not uniform, concrete produced in the plant will not be uniform.

Many specifications establish that when aggregates are stock-piled, the materials must be placed in horizontal layers which cannot exceed a thickness of approximately 3 to 4 ft. When delivery of the aggregates to the plant site is by truck, this can readily be done. If the aggregates are unloaded by crane and clamshell bucket from railroad cars, they also can be deposited in 3-ft layers. Similarly, if aggregates are reclaimed by clamshell bucket, they can be removed from the stock pile in horizontal layers in a manner to minimize segregation.

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Gunning concrete on dry-stacked blocks cuts job time . . . builds strong structure

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Where storage piles are built up by a radial stacker, placing of material in horizontal layers is not possible. For this reason the stock piles in a plant with a radial stacker should be relatively low since the greater the height the greater the damage due to segregation. Further, when radial stackers are used, it becomes highly desirable to keep the stock pile built up at all times, for the drop from the end of the radial stacker to the top of the pile is thus materially reduced. Great care should be exercised to make certain that the material is not all charged on the pile at one point, resulting in a coning effect with the coarse materials running down the slope in all directions.

The same problem is present in stock piles under shuttle conveyors. Care in the charging of these piles will go a long way to reduce segregation and breakage. If the materials to be handled are large, such as 6-in. cobble, or if the height of the pile is great it will be necessary to provide stone ladders. Stone ladders arranged so that material flows from one step to another and never has a clear fall of more than 5 or 6 ft, fall far short of eliminating breakage and segregation. But they go a long way toward reducing these effects.

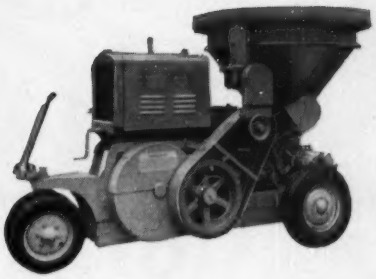
Prevent Careless Handling

In the case of mass concrete plants where, of necessity, the stock pile is both high and long, and where, even with the use of stone ladders, segregation and breakage are still major factors, it often becomes necessary to provide facilities for washing and re-screening on top of the storage bin. The provision for such a washing and re-screening plant, small and compact though it may be, is a costly matter. If this cost is to be avoided it becomes important to manage the stock pile so that carefully specified and controlled material is not damaged by careless handling.

Material from stock piles is reclaimed most generally either by clamshell bucket or by a reclaiming conveyor built in a tunnel underneath the pile. These tunnels generally are of reinforced concrete or of corrugated metal construction similar to large corrugated metal culverts. The reinforced concrete tunnels are suitable for use in connection with ready-mix and concrete products plants. They are permanent structures.

(Continued on page 112)

Baltimore Ball Park Capacity Increased



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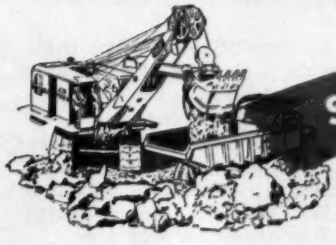

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CONCRETE . . .

Continued from page 108

If properly designed, there is no question but what maintenance will be negligible, and they will have a life exceeding that of other portions of the plant.

The corrugated metal tunnels are especially well adapted for use with plants for mass concrete operations. They are lower in cost than reinforced concrete tunnels. They have a relatively high salvage value, which becomes an important factor when it is considered that the plant for mass concrete operations is usually set up to produce a definite yardage and will be in use for 2 or 3 yr only at one location. The author knows of no figures on the expected life of a tunnel of this kind. Because the conditions to which a reclaiming tunnel is exposed are more severe than that of the usual corrugated metal culvert, the expected life of a corrugated metal reclaiming tunnel will necessarily be less. One thing is certain. A corrugated metal tunnel will not give the same life as a reinforced concrete tunnel.

Material Handling Equipment—Capacities

Concrete Prod. C.Y./Hr.	CEMENT HANDLING EQUIP. Req'd Cap. Bbl./Hr.	Screw Conv. Size Req'd		Bucket Elev. Size Req'd	
5	7	8 in.	See Note	8x5 in.	See Note
10	13	8 "		8x5 "	
20	26	8 "		8x5 "	
30	39	8 "		8x5 "	
40	52	8 "		8x5 "	
50	65	8 "		8x5 "	
60	78	8 "		8x5 "	
70	91	10 "		10x6 "	
80	104	10 "		10x6 "	
90	117	10 "		10x6 "	
100	130	10 "		10x6 "	
125	163	10 "		12x7 "	
150	195	10 "		12x7 "	
175	228	10 "		12x7 "	
200	260	10 "		14x8 "	
250	325	10 "		14x8 "	
300	390	10 "		14x8 "	
400	520	10 "		Two 14x8 "	

NOTE: Recommend minimum of 10 in. screw conveyor and 10 x 6 in. elevator because of excessively long time required to unload railroad car or trailer unit when smaller facilities used. Sizes smaller than 8 in. screw conveyor and 8x5 in. elevator not recommended for concrete plants under any circumstances.

An entrance to a reclaiming tunnel should be provided at each end. This is a safety measure since it is possible that in a tunnel having

(Continued on page 116)

1000 f.p.m. Clyde Hod Hoist speeds construction at 430 Park Avenue

This high speed Clyde Hod Hoist on the 430 Park Avenue job was supplied by the Fordham Hoisting Equipment Co. of New York City.

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"EUCS" KEEP NORTH CAROLINA JOB WELL AHEAD OF SCHEDULE

Hertford & Cecil are using 7 Euclid Scrapers, five 15.5 cu. yd. and two "Twins" of 18 yd. struck capacity, to move most of the million yds. on a rush project for the Corps of Engineers in North Carolina. The job has a one year deadline but was nearly 50% complete in 90 working days—the productive capacity and versatility of the combination Euclid fleet really made the dirt fly! Material ranged from wet sand to tough hardpan laced with cypress roots and stumps. Hauls average a mile over roads with high rolling resistance—often exceeding 15%. The power and traction of "Euc" Scrapers and their rugged dependability has enabled these contractors to set a fast pace on a difficult job that seemed impossible for large capacity self-powered scrapers.

ANOTHER MISSOURI BASIN DAM BUILT WITH "EUCS"

Excavation for Tiber Dam in Montana will exceed 15 million cu. yds. which must be moved in three working seasons. James-Wunderlich Construction Co. is using a fleet of 25 "Eucs", eight 15.5 cu. yd. scrapers and seventeen 25 cu. yd. bottom-dumps to haul from three borrow pits as far as 2.8 miles from the dam. Five of the scrapers are top loaded by a 5 yd. dragline that excavates impervious fill material from the outlet channel. Average hourly production of each scraper on a 2200 ft. haul is 90 bank yds. of material weighing 3200 lbs. per bank yd. Excellent job availability and minimum downtime of the "Euc" Scrapers is paying off in extra production and lower costs.

The Bottom-Dump fleet is now on its third major dam project since 1947, having worked on Cherry Creek Dam in Colorado prior to moving 6 million yds. at Oahe Dam in South Dakota . . . further proof of Euclid stamina and dependability.

VERSATILITY IS THE WORD FOR THE EUCLID TWIN-POWER SCRAPER

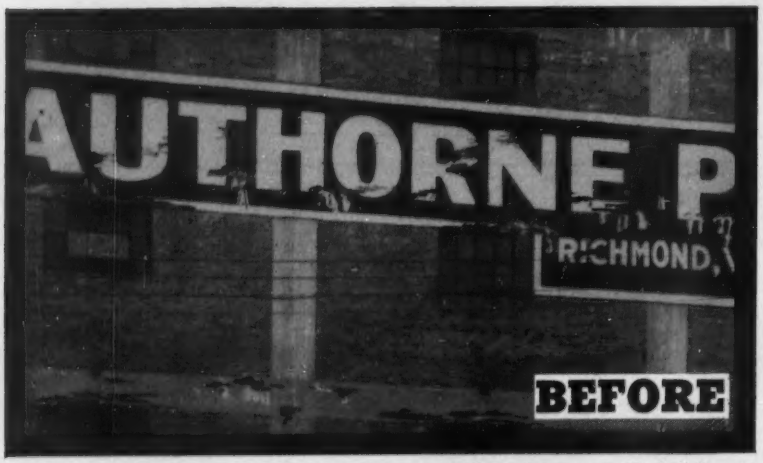
It's four-wheel drive, no-spin differential, and total of 380 or 400 h.p. with Torqmatic converter and transmission provides ample power and traction for self-loading and high speed hauling of heaped loads up to 24 cu. yds. Contractor Bert Altfillich first used his two "Twins" for canal and levee construction on a flood control project at Long Beach, California. He then put them to work on land leveling for a large residential subdivision and is now completing a plant site grading job involving 250,000 cu. yds. of sand.

Owners in other sections of the country, too, are enthusiastic about this Euclid Scraper because of its efficiency and low cost dirt moving performance on road work, dams, airports, stripping and stockpiling operations . . . one of every three is a repeat order.

"EUC" SCRAPERS . . . FASTEST GROWING LINE IN THE FIELD!

"Eucs" cut Down-Time and Maintenance Cost to new lows . . . proved on job after job.

THORITE patching mortar and two THOROSEAL applications rejuvenated this Virginia building



Constant weather exposure over the years caused the masonry of this building to disintegrate. If this unsightly condition had not been corrected it would have finally imperiled the structure of the building.

All concrete spandrel beams, columns, window heads and brick sills were patched and brought flush with surrounding surface by the use of The THORO System product, THORITE, a twenty-minute set, nonshrink, patching mortar. Two brush coats of THOROSEAL were then applied over entire reinforced concrete surfaces, to prevent further disintegration, also to beautify building.

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STANDARD DRY WALL PRODUCTS INC.
NEW EAGLE PENNSYLVANIA

CONCRETE . . .
Continued from page 112

only one access, a workman might be trapped between a closed end of the tunnel and a blockage formed in the tunnel, due to material flowing through a jammed gate.

The reclaiming conveyor is a conventional belt conveyor except that it is charged at innumerable points. Because of the length of the tunnel, it is impractical to provide skirt boards from one end of the conveyor to the other. This means that the charging gates must be designed properly to control the flow of material from the stock pile above and place it without spillage on the reclaiming belt.

Certain materials such as No. 4 to ¾ in. can be charged on to a reclaiming belt by a clam-type gate turned so that the two clam halves operate in a direction at 90 deg to the travel of the belt. By restricting its opening and properly locating the gate, the reclaiming belt can be charged effectively. This type of gate will not handle the larger materials as efficiently. Also, using this type of gate with sand would require the presence of an operator at all times because of the possibility that sand will arch over the relatively narrow opening required if the belt is to be charged properly and not flooded.

Aggregate storage and handling facilities involve a large number of chutes, valves and accessories. Practically all aggregates are highly abrasive. An abrasive sand can cut through the bottom or the sides of a chute in almost no time at all. Furthermore, aggregates are handled in considerable quantity. For this reason the number and length of chutes and other facilities over which the aggregates slide must be held to a minimum. An extensive chuting system will result in high maintenance costs. It is important to hold the number of chutes over which aggregates must pass to an absolute minimum.

Cement Handling

Cement is delivered to the plant either in hopper bottom railroad cars or by special cement haulage units for over-the-road delivery. The trend today is toward greater use of the special cement trailer units because of the ease with which delivery of cement can be geared to consumption. But it does not follow that this method of delivery is to be preferred in all instances. Generally it is relatively easy to determine which method of

(Continued on page 120)

You Save Erection Time with High-Strength Bolts

Construction moves right along when you use Bethlehem High-Strength Bolts to join structural members. For these bolts can be installed quickly, and by a two-man crew.

Bethlehem High-Strength Bolts are used in place of field-driven rivets. They are used with a hardened washer under the head, and another washer under the hexagonal nut. This permits the development of the high torque required, without scoring the connected material. While one man holds the bolt-head with a holding wrench, his partner drives the nut to refusal, using an impact wrench. The entire assembly can be completed in a matter of seconds.

Bethlehem High-Strength Bolts are made of carbon steel in a wide size range. They are heat-treated by quenching and tempering to meet the requirements of ASTM Specification A-325. Additional information about these bolts is available in a booklet we have just published, "High-Strength Bolting for Structural Joints." A copy will gladly be mailed on request.

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BETHLEHEM, PA.

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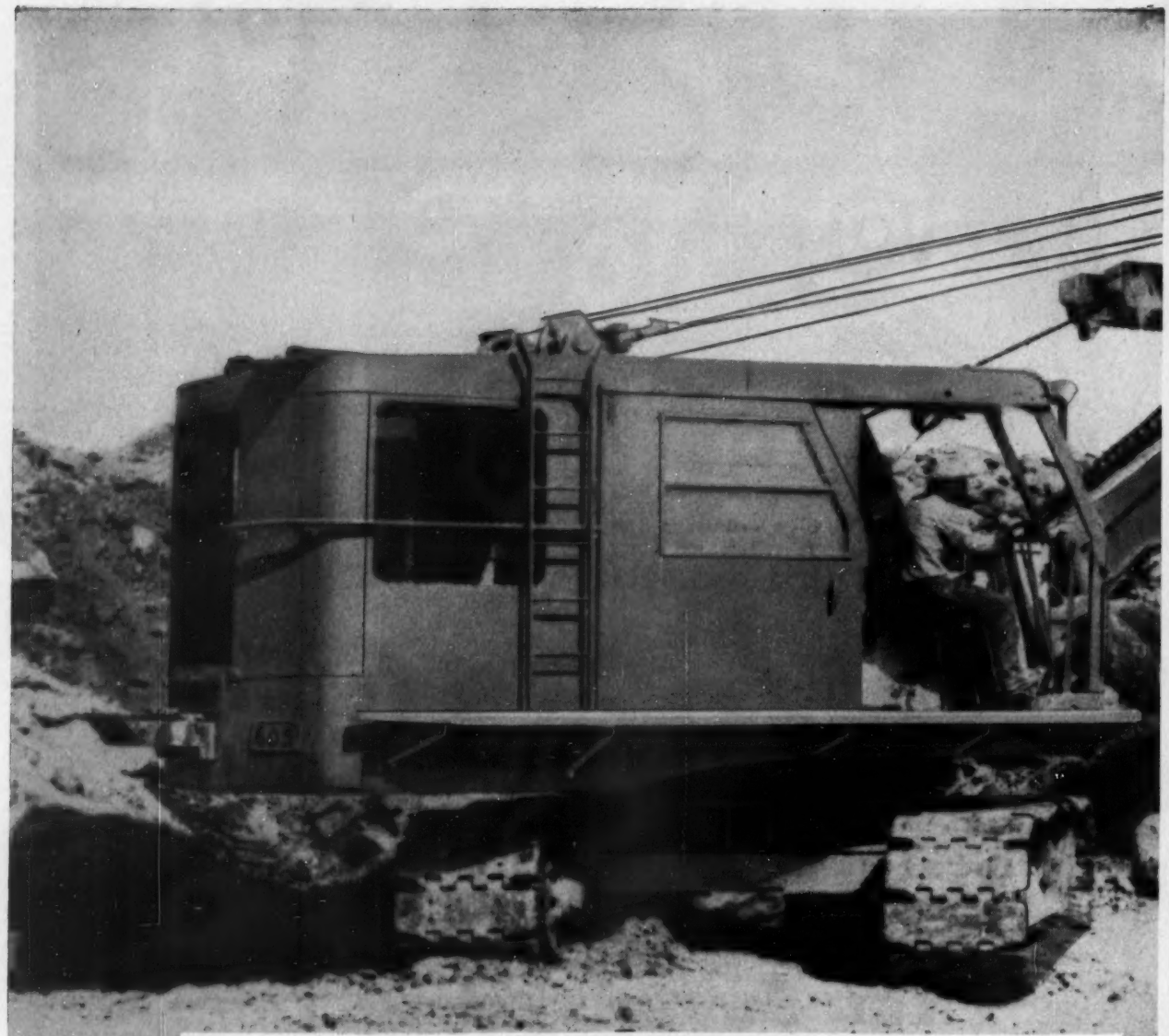

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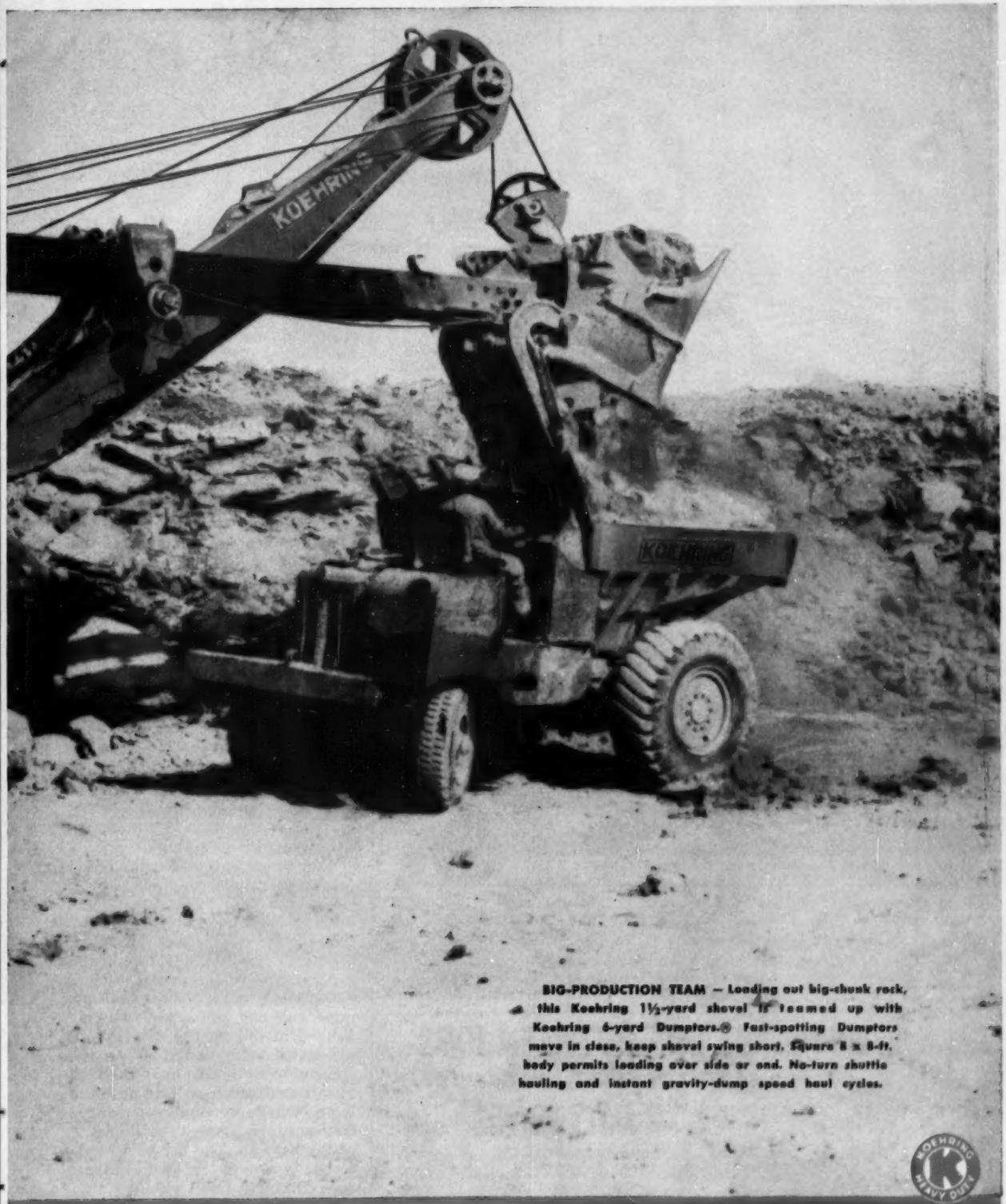
With Koehring excavators and cranes you gain an important production advantage in extra work capacity. There are some very simple ways to check this. Take lifting capacities, for instance. The machine with the heaviest lift capacity not only picks up larger crane loads — it also has more stability and power to increase shovel, dragline and clamshell output. Be sure to check lift ratings, and other clear-cut measurements of "KOEHRING WORK CAPACITY" before you buy any excavator or crane. Your Koehring distributor has important figures to show you. See him soon.

K331.

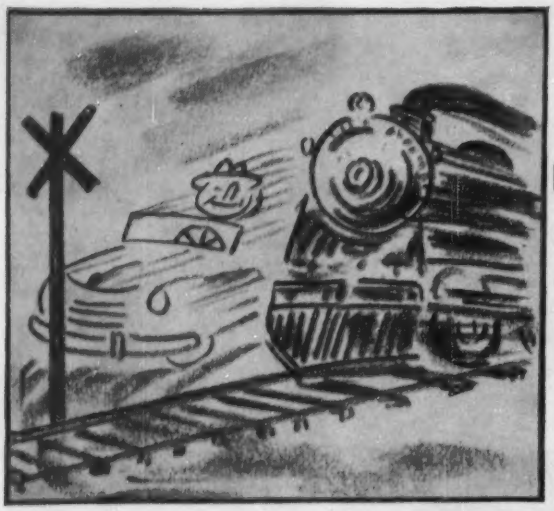
lift capacities up to 79½ TONS . . . ½ to 2½ YARDS dipper capacities



BIG-PRODUCTION TEAM — Loading out big-chunk rock, this Koehring 1½-yard shovel is teamed up with Koehring 6-yard Dumpsters.® Fast-spotting Dumpsters move in close, keep shovel swing short. Square 8 x 8-ft. body permits loading over side or end. No-turn shuttle hauling and instant gravity-dump speed haul cycles.

KOEHRING Company MILWAUKEE 16, WISCONSIN

Subsidiaries: Parsons • Kwik-Mix • Johnson



It doesn't pay to take chances when buying a mixer either!

Taking chances on highways and streets costs America 2,092,000 casualties annually.

● You know just what the performance of a Mixer will be when it's AGC RATED!

For to wear the AGC plate, portable concrete Mixers and Pavers must meet rigid specifications as to sizes and mixing capacity.

Be sure the Mixer you buy is AGC RATED!

Mixer Manufacturers Bureau

Affiliated with the Associated General Contractors of America, Inc.

CHAIN BELT COMPANY
Milwaukee, Wisconsin

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa

BLAW-KNOX COMPANY
Foote Construction Equipment Division
Hunda, New York

THE JAEGER MACHINE CO.
Columbus, Ohio

THE KNICKERBOCKER CO.
Jackson, Michigan

KOEHRING COMPANY
Milwaukee, Wisconsin

KWIK-MIX COMPANY
Port Washington, Wisconsin

THE T. L. SMITH COMPANY
Milwaukee, Wisconsin

WORTHINGTON CORPORATION
Concrete Machinery Division
Plainfield, New Jersey

TAKE the SHORTEST TIME BETWEEN JOBS—
fast loading, manuverable

MILLER *Tilt-Top!*

With a **MILLER, ONE MAN** tilts, loads, locks in less than two minutes . . . is on his way to the next job with **no lost motion!** Faster tilt loading cuts manpower loss . . . permits more production—more profit from man and machine on every job! The big new 10 ton, tandem axle Tilt-Top, shown at left has a level riding, (independent acting) walking beam suspension—extra low tilt angle for loading—hauls HD-5's, TD-9's, D-4's or rollers up to 10 tons!

Model "BT-10" 10 TON

EQUIPMENT INCLUDED: platform, four 8.25 x 20x12 ply tires, heavy duty electric brakes, with automatic electric break-away switch and controls, tires, lights, reflectors and safety chains.

SEE YOUR DEALER OR WRITE

MILLER ® Tilt-Top TRAILERS
research engineers
457 South 92nd St., Milwaukee, Wis.

CONCRETE . . Continued from page 116

delivery is more economical and more desirable so far as any one particular installation is concerned. If there is any question, the plant should be set up so that delivery can be made either way. Equipment furnished for one type delivery will work with the other.

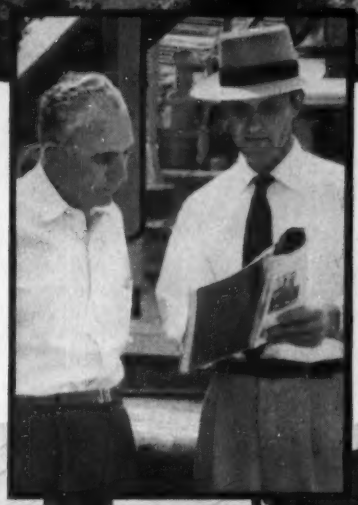
• **The conventional screw conveyor** and bucket elevator are by far the most common means of handling cement for concrete plants. The screw conveyor is a simple auger or screw which forces the cement forward along a trough. It can be installed to transport the cement horizontally, or it may be inclined upward or downward, as required. If the angle of inclination exceeds 10 to 15 deg, increased speed and increased power will be required.

Screw conveyors have a definite limit as to their length. The torque transmitted by the driving motor to the central pipe on which the flight blades are mounted limits the length of the conveyor. The pipe simply twists apart if the conveyor is made too long. The restricting of the flow of cement into the conveyor is sometimes adopted to allow the designer to extend the length of a screw conveyor. The level of the cement in the trough is kept low, and the conveyor is operated at a very much higher speed than would normally be the case. Restricting the flow makes it possible to design a longer screw conveyor for a specific capacity because the torque at higher speeds is less than that at lower speeds for the same horsepower.

Generally only two major troubles are encountered with screw conveyors: Noise and jamming. When in operation they often make a very objectionable noise. This is because the supporting bearings must run dry since they are immersed in the cement. If they are lubricated with an oil or grease, the combination of cement and oil may constitute a cutting medium which will cause rapid wear of the connecting shafts and "cutting out" of the bearing. The use of a hardwood, wax-impregnated bearing will eliminate this trouble.

Sometimes a piece of wood or burlap or tramp iron gets into the screw conveyor with the cement. This trouble was much more prevalent in the past when much bulk cement was delivered in boxcars. Delivery by hopper-bottom cars

(Continued on page 122)



Jim Reo (left), president of Waterway Construction Company, and Frank J. Wolan, Standard Oil Automotive Engineer, work closely together to keep Waterway's earthmoving equipment on the job. This type of co-operation is available to you. Just call your nearest Standard Oil office. Or write: Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

"How we cut costs in 'dozing and digging"

STANOLUBE HD-M Motor Oil

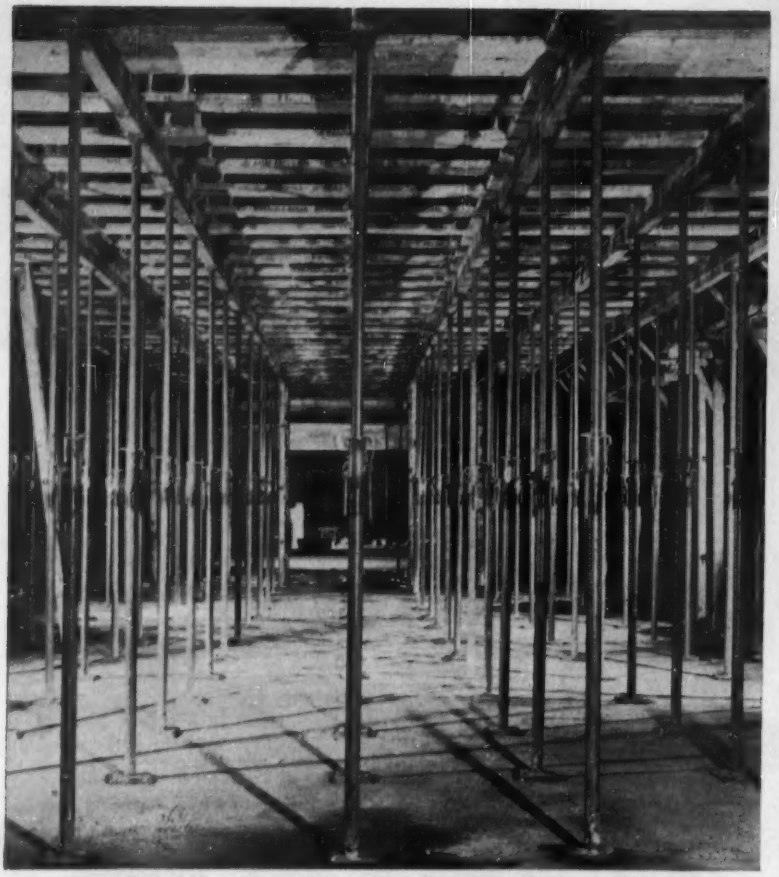
"You've got to keep equipment on the job to keep costs down and make money in earthmoving," says Jim Reo, president of Waterway Construction Company, Detroit, Michigan. "It's a close-margin business that often calls for round-the-clock schedules of full-load operation."

To help him keep on schedule, Jim Reo has relied on Standard Oil products and the help of Standard Oil Automotive Engineers for over 32 years. Since it was first introduced, he has used STANOLUBE HD-M Motor Oil in all 25 pieces of his equipment. During that period there has been no scuffing of rings or liners, no ring sticking, no plugging of oil control rings . . . in fact, no downtime whatsoever because of oil failure.

Standard's STANOLUBE HD-M is a fine heavy duty motor oil. Its superior lubricating qualities—more effective detergent dispersant action and greater oxidation stability—keep wear and deposits at a minimum. STANOLUBE HD-M can work for *you* with results that pay off—put it on *your* job today.

STANDARD OIL COMPANY (Indiana)

STANDARD



These 13-foot Safway Shores support two 4" x 4" ledgers. Notice that they require no cross bracing even at 12½-foot extension.

Parker Pen Builds a Noise-free Plant

Hundreds of Safway Steel Shores Speed Construction on Ultra-modern Factory

THE GEOMETRIC FOREST of Safway Steel Shores you see here supports the concrete formwork during early stages of construction on a new kind of factory.

It's the 200,000 square foot Parker Pen plant in Arrow Park at Janesville, Wis. Designed to eliminate production noises, the plant is a model for industrial plants of tomorrow.

ONLY 3 SHORE SIZES NEEDED

No less modern in design and operation are micro-adjustable Safway Steel Shores designed to cut labor time and costs on all kinds of reinforced work. Each size Safway Shore is adjustable through a 5-foot range so that only three sizes are needed to cover the full range from six to 15½ feet. Select from three heads for a wide variety of applications.

You can rent or buy Safway Shores from any one of the Safway Shore dealers near you. To get more information on cutting costs with Safway Shoring, write for your free bulletin. Submit construction problems for analysis.

SAFWAY STEEL PRODUCTS INCORPORATED
6247 West State St.
MILWAUKEE 13, WIS.
Manufacturers of Tubular Steel Scaffolding and Equipment

RENTED and SOLD by distributors everywhere

CONCRETE . . .

Continued from page 120

and bulk cement truck-and-trailer units has almost eliminated this source of trouble yet the danger is ever present. These trouble makers can get into the system between the times delivery units are discharging cement. Coarse screens on all hoppers, inlets and openings, together with constant vigilance are the best preventives.

• **Bucket elevators** commonly used for concrete plants are of the centrifugal discharge type. The buckets are spaced or separated one from another by a wide gap. Speed is carefully selected in relation to the diameter of the head pulley so that the material will be thrown from the bucket as the bucket passes over the head sprocket. If the speed is correct, the material will go into the discharge pipe on the elevator head. If the speed is too great, the material will be thrown against the top of the elevator and then fall down through the elevator to the boot. If the speed is too small, there will not be sufficient centrifugal force to clean the buckets, and again the material will be returned to the elevator boot. Varying the speed more than 10 to 20% above or below design speed will reduce the capacity of the elevator. This fact has been overlooked by those who have attempted to increase their elevator capacity by increasing the speed.

Cement elevators are designed so that the buckets will pick up the material by scooping it from the elevator boot. An elevator boot to handle cement should have a bottom plate curved so that the bucket lips just clear it as they pass around the rail pulley thus eliminating dead pockets. Cement will harden in pockets or dead spaces. Later lumps may break off and be carried up the elevator to lodge finally in the fill valve of the batcher with resultant trouble.

The boot may be charged either from the front, rear or either side; in fact, so far as operations are concerned, the only critical factor is the rate of charging. Cement cannot be fed to the elevator faster than the buckets will carry it away.

As in the aggregate bucket elevators, the pitch of the head sprocket is critical. Sprockets generally are of high grade cast iron with a hardened surface on the teeth and rim. This hardening of the iron extends appreciably, ⅛ to

(Continued on page 124)

FREE!

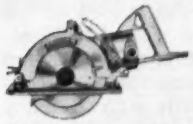
New SKIL Blade selector

will save you time and money—both in everyday sawing and cutting difficult problem materials

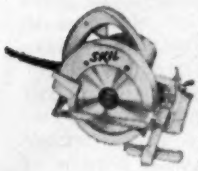
SKIL Blade Selector quickly shows you right SKIL Saw and Skil Blade for cutting *all metals*, as well as tile, limestone, hard woods, composition, Celotex, stone, scoring and cutting concrete, masonry, tough alloys, plastic and many other materials.

This amazing Selector tells you which SKIL Saw is just right for *your* problem—which SKIL Blade or Cut-off Wheel is the right team-mate for your saw. To get *yours* without cost, see your SKIL distributor or send coupon below!

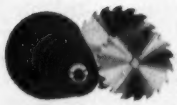
Only "SKIL has the answer" because only SKIL offers you all this!



9 Extra-Heavy Duty SKIL Saws—with high-torque worm drive. The favorite type for over 25 years on tough metals and compositions that no other saw can handle. Absolutely minimum maintenance in heaviest service. Blade diameters from 6″ to 12″.



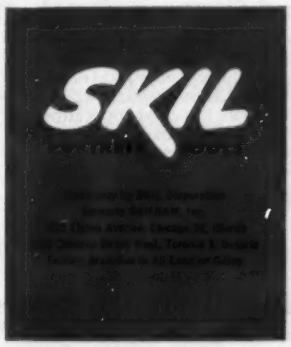
3 Heavy Duty SKIL Builders Saws—with high blade speed. Low in cost, light weight and easy to handle. The new SKIL Builders Saws are ideal for quick cut-off work and for use with SKIL abrasive cut-off wheels. Blade diameters: 6″, 7¼″, 8¼″.



98 Specially Designed SKIL Blades and Abrasive Cut-Off Wheels—carried in stock by SKIL Branches and distributors. With the proper SKIL Saw you can efficiently cut almost any material encountered in the construction field with substantial savings in time and money.

Only SKIL offers this wide selection of saws, blades and abrasive cut-off wheels!

FREE! Ask your SKIL distributor for a SKIL Blade Selector and a FREE trial of the right SKIL Saw with the Exact SKIL Blade or Cut-off Wheel to solve your toughest cutting problem.



SKIL Corporation, Dept. CME-54
5033 Elston Avenue, Chicago 30, Illinois

- ☐ I would like a SKIL Blade Selector
- ☐ I would like a demonstration and free trial
- ☐ Please send literature on SKIL tools

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Company_____

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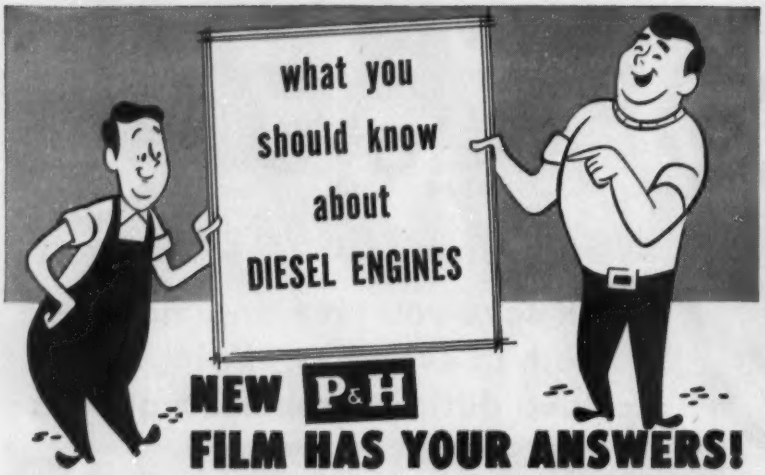

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For a quick "Diesel education," you should see this new color slide film. You'll be wiser in the ways of modern diesel engines . . . how they operate . . . how they compare with gasoline engines . . . what they'll do . . . why they'll do it better . . . how diesels save you money.

For a personal showing of "What You Should Know About Diesel Engines," see your P&H Dealer. Or, write us for details.

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HARNISCHFEGER CORPORATION CRYSTAL LAKE, ILLINOIS

the P&H Line

Concrete facts about Concrete Vibrators and Screeds

In beam sizes up to 30'. 2 HP air-cooled engine. Mounted on 4 multiplane vibration dampeners. Also available without beam.

Model AGW
4½ HP 4 cycle air-cooled engine, automatic centrifugal ball bearing clutch, delivers 6000 to 9300 VPM, with wheelbarrow mount.

Model BU
2 HP at 9000 VPM
115 V. AC or DC

See your STOW distributor about STOW vibrators and screeds today. Send for free Bulletin 526.

STOW is the name you want!

The high operating speeds of the new STOW line of Concrete Vibrators make possible the use of heavy duty, light weight flexible shafting and lighter, more efficient vibrator heads—which speed operations, cut costs. And, STOW design provides convenient, practical speed control so *attachments may be used directly on the vibrator shafts.*

STOW SCREEDS—permit placing more than 300 cu. yds. in less than 8 hours; strike off and impact in one operation; leave surfaces true to grade; work up to and around manhole covers and obstructions.

STOW

STOW MANUFACTURING COMPANY
31 Shear Street Binghamton, New York

CONCRETE . . Continued from page 122

Fig. 6 . . . HEAD SPROCKET WEAR is rapid after hardened surfaces wear through. Split design makes for easy replacement.

¼ in. below the surface. Once this hardened layer wears through, the sprocket will show very rapid wear, requiring replacement. *Fig. 6* shows a sprocket worn well beyond the chilled surface.

Traction wheels have been used with considerable success on the head shaft of cement bucket elevators. These traction wheels have no teeth whatsoever. The rim is chilled in the same manner as are the sprockets. The barrels of the chain links ride directly on the traction wheel. There is a tendency for slippage of the chain on the traction wheel when the elevator is first started.

This slippage between the barrels of the chain and the wheel, not being concentrated in any one spot, does not produce excessive wear. In fact, it has a beneficial effect in that the shock load on the motor and drive assembly is reduced in proportion to the amount of slippage. Because there is no engagement of tooth with chain, a bucket elevator equipped with a traction wheel will run much smoother than one with a sprocket.

The accompanying table gives capacities of bucket elevators in relation to hourly output of ready-mix and concrete products plants.

Because chain pull is less on cement elevators, double-chain elevators are not required. Cement bucket elevators with heights of 115 to 120 ft have operated satisfactorily and have given trouble-free, dependable service. Since there can be no moisture in a cement elevator, the chain is not subjected to rusting or any corrosive action. The net effect is that much longer chain life is to be expected. An all-steel chain can handle as much as 250,000 to 300,000 barrels before replacement is necessary.

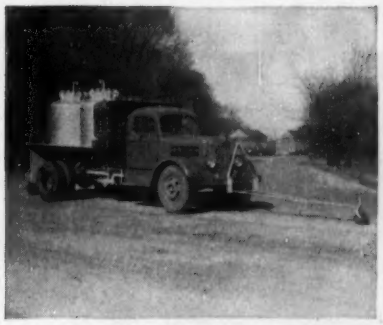
- **Pneumatic cement handling sys-**

(Continued on page 127)

A TYPE FOR EVERY REQUIREMENT

3 choices

FOR YOUR 125 C.F.M. COMPRESSOR NEEDS

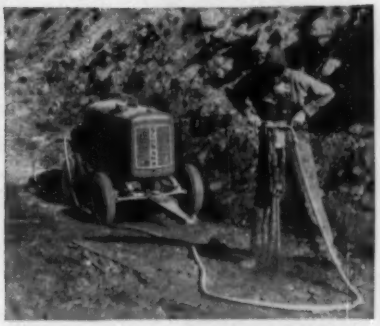


SCHRAMM
Pneumapower

125 skidded unit can be placed in any position on truck, an advantage not possible with a power take-off assembly.

SCHRAMM
Pneumatractor

equipped with Back Hoe and Front End Loader, recommended for operating a complete assortment of construction tools.



SCHRAMM
UniStage

125 4-wheel trailer type operating 55# drill for drilling holes in the bottom of cut for dynamite blasting.

the ***Pneumapower*** engine driven compressor is a compact package with a decided weight advantage. Skidded, this outfit can be placed in any position on a truck, leaving plenty of space for equipment and maintenance crews. Also available for two wheel mounting. *A Schramm exclusive!*

the ***Pneumatractor*** provides a complete mobile supply of air, 125 c.f.m., for operating a wide variety of construction tools with the additional capacity to PUSH . . . PULL . . . and POWER a varied assortment of auxiliary units. *A Schramm Exclusive!*

the ***UniStage*** with the Pneumapower and Pneumatractor represent simplified compressor design that eliminates two-staging and intercoolers, has fewer parts, two gaskets under pressure instead of thirty. Pneumastat control is a feature that provides fuel savings up to 50%. *A Schramm exclusive!*

SCHRAMM, INC.

The Compressor People WEST CHESTER, PA.

The new PASSWORD

R-45 ROADRANGER®

8-speed transmission

Model R-45 ROADRANGER

Get these features: **1.** No gear splitting—8 selective gear ratios, evenly and progressively spaced. **2.** Easier, quicker shifts—38% steps—one shift lever controls all 8 forward speeds. **3.** Higher average road speed—engine operates in peak hp range with greater fuel economy. **4.** Less driver fatigue—1/3 less shifting. **5.** Range shifts pre-selected—automatic and synchronized. **6.** More compact than other 8-speeds. **7.** More cargo on payload axle.

Around the terminals—on the docks—in the truck-stops and garages . . . the new password is RoadRanger . . . the password to the greatest boost in truck performance ever offered. For the new R-45 RoadRanger Transmission offers 8 speeds forward . . . shifted by a *single* lever!

This is the RoadRanger Fuller designed specifically for engines in the 450-inch class—in the 125-160 hp range.

With 1/3 *less* shifting, and split-shifting entirely *eliminated,* the new R-45 permits *more* speed on hills, *better* control in traffic, *faster* round trips. *Specify* this great, new Transmission on *your* trucks . . . and you'll soon see why operators are saying "the new password is *ROADRANGER!*"

Fuller TRANSMISSIONS®

FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

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CONCRETE . . .

Continued from page 124

tems are found more often on mass concrete plants than on commercial ready-mix or concrete products plants. The reason for this is that mass concrete plants often are located on the sides of a steep ravine or in other unusual locations requiring unusual means of material handling. The pneumatic systems lend themselves well to these conditions. Pneumatic installations are flexible, generally requiring a pipe from the receiving unit to the storage silo.

It is not intended to imply that pneumatic systems have no place in the setup of a ready-mix plant. But in general, the conventional screw conveyor and bucket elevator show a lower first cost and a lower operating cost. Unless the installation is unusual or difficult, pneumatic systems may not be competitive when all costs are concerned. In a pneumatic installation it is necessary to provide an effective silo vent to release the air required to transport the cement.

Water

It is necessary that an adequate supply of water be available at the plant site—sufficient in quantity and at sufficient pressure for peak production.

In winter it will be necessary to heat the batch water. Various boiler units are on the market. The flash-type boilers have the distinct advantage that little time is lost at the beginning of a day's operation, and the advantage that they are more responsive to variations in demand. These units, on the other hand, need a relatively soft water, otherwise liming will result. The same is true to a lesser extent of the conventional boiler.

Power

The unseen ingredient of all concrete batches is power. Adequate 3-phase electric power must be available. The transformer bank and incoming lines must be large enough to carry the full load of the plant. This is seldom a concern of the ready-mix operator since he need only notify his power company of his requirements. It is something to consider in selecting a new site. The power situation should be investigated before any definite commitments are made.

* * *

THE NEXT ARTICLE of this series will appear in the June issue.

Thermoid helps Michigan Power Shovel with this unusual clutch design

Every day, all year 'round, Michigan Power Shovels and Cranes deliver the extra output that completes tight schedules on time.

Thermoid helped Michigan's engineers develop a single disc, double faced 12-segment clutch. With the experience of half a century in making friction materials for special applications like this, Thermoid was able to produce a long wearing, stable friction material which is ideal for the heat compensating and quick change features of Michigan's clutches.

Thermoid makes a complete line of woven, molded and special types of Clutch Facings and other Friction Materials. Superior construction, plus close cooperation on individual problems, makes Thermoid the choice of leading manufacturers in many fields.

Thermoid

Thermoid Company
Industrial Friction Materials Division
Trenton, N.J.

TOPPING THE STACK 130 FEET UP!

The Job: Erecting 125-foot stack at The Timken Roller Bearing plant in Canton, Ohio.

The Contractor: The Towne Construction Co., 2502 Eighth Street, N.E., Canton, Ohio.

The Equipment: BAY CITY 20-ton capacity CraneMobile® with 140 feet of boom including jib.

In a very interesting letter which accompanied this photo, Mr. H. N. Helfen, President, Towne Construction Co., points out that "the CraneMobile has done more than it was supposed to. We raised and lowered the 140-foot boom without help". The top section of the stack weighs 2½ tons and is being carefully set in place by the sure control of the BAY CITY. There are a number of reasons why the CraneMobile out-performs — why we repeatedly say "All lifts are easier with a CraneMobile". Here are a few examples:

- Accurate, powerful, independent boom hoist
- Collapsible high gantry
- Power load lowering device
- Crane and carrier built as a unit
- Tandem, ball-bearing mounted drums

The CraneMobile is a powerful, efficient crane that combines rugged construction with flexible, mobile service and accurate load control. Why not get the full story by seeing your nearest BAY CITY dealer for details.

BAY CITY SHOVELS, INC. • Bay City, Mich.

Write for these catalogs describing BAY CITY *Crawlers of ½ yard and up,* BAY CITY *CraneMobiles and CraneWagons in capacities to 25 tons.*

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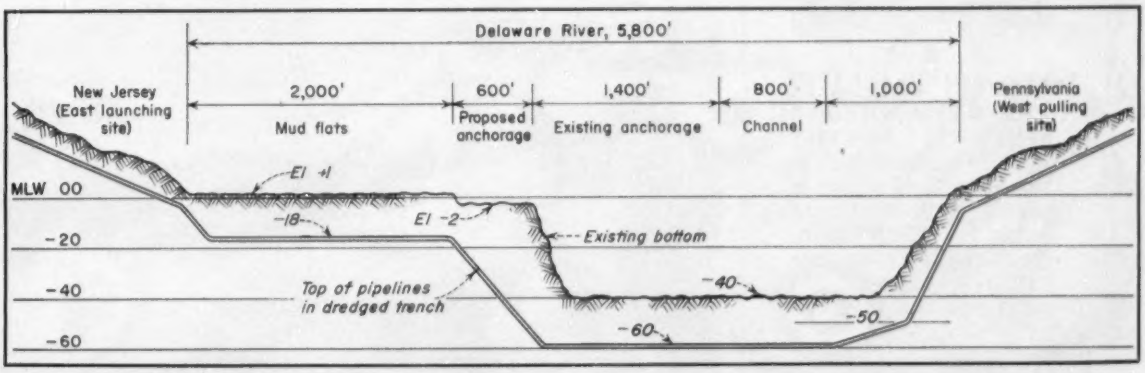
BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

By tying parallel 8- and 12-in. lines together for simultaneous launching . . .



Then pulling them 5,800 ft through one trench beneath the Delaware they can . . .

Make One Job of Two Pipeline Crossings

By JIM CRAWFORD, Eastern Manager, Missouri Valley Dredging Co.

TO CUT DOWN THE WORK of installing two 5,800-ft pipelines under the Delaware River near Philadelphia, Missouri Valley Dredging Co. coupled them side-by-side, launched them as a unit, and pulled them simultaneously through a common trench. Spacer bars kept the two lines the proper distance apart during the pull, which was eased by pontoons that partially buoyed the double line. Later, pontoons and spacers were recovered to leave the two lines entirely separate from each other.

The pipelines, one 8-in. and one 12-in., were installed for Sinclair Pipe Line Co. and Gulf Oil Co. respectively. Wall thickness of each was ½ in., plus ⅝ in. of Somastic coating and 1¾ in. of Hevicote concrete encasement.

In preparation for the pull, the Delaware was dredged as shown in the sketch above. A 27-in. suction dredge handled the east-shore excavation to a maximum depth of 58 ft, while two bucket dredges clammed out the rest of the material in the deep sections to put the top of pipe the required 60 ft below mean low water. The three dredges removed 650,000 cu yd in 90 days.

Random 40-ft lengths of the coated and cased pipe were assembled at the launching site on the Jersey shore. Each line was welded into two 2,900-ft sections, whose

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a forward looking surveyor, named George Washington, used the best instruments of his time.

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PROGRESSIVE SURVEYORS
use modern WILD instruments for matchless precision and operational speed... for Substantial MAN-HOUR SAVINGS!

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Set Yourself "Up to DATE"
MAKE A DATE WITH OUR DEMONSTRATION STAFF
to handle a modern WILD instrument. We will arrange to show you the unmatched performance of WILD Transits, Theodolites, Levels and other surveying equipment...in action under field conditions.

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★ Ease and speed of handling
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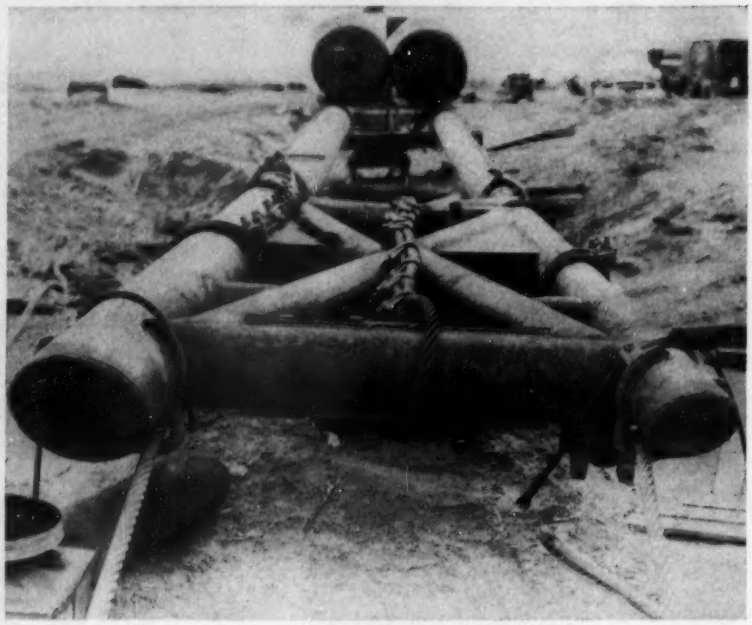
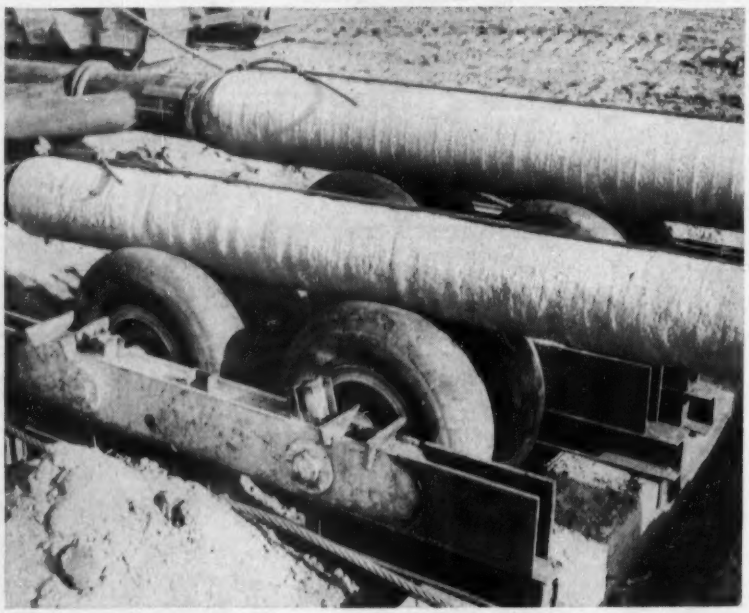


PULLING HEAD welded to nose of pipelines is fabricated of 8- and 12-in. pipe and is rigidly cross-braced. Note how lines are offset on dolly in background to balance them.



LAUNCHING DOLLY is fitted with four pairs of wheels carrying treadless-recapped 10.00-15 tires to ease pipes into water. Cables atop pipes are for freeing pontoons at end of job.

joints were X-rayed and field coated. All four sections were pigged and tested to 1,200 psi.

A 3,000-ft narrow-gage railroad track, on which dollies were to ride at 80-ft intervals, was laid for launching both pipelines simultaneously. To allow for side movement of the pipes during launching, the dollies were fitted with two greased steel plates. One plate was welded to the dolly bed, the other was slotted and bolted on top of the first one. On this, a timber bolster carried the pipes. Due to the difference in weight of the 8- and 12-in. lines, they had to be placed off center to balance them on the dollies.

The two pipelines were to lie 3 ft apart in the trench. To hold

(Continued on page 132)

FRAM keeps your engines on the job!

Gasoline or Diesel—FRAM Filters pay off in better performance ... longer life ... lower operating costs!

FRAM OIL FILTERS GUARD YOUR POWER . . . protect precision parts against power-robbing dirt, sludge, and abrasives. Your engines run smoother, pull harder . . . with fewer breakdowns and overhauls. You save money too . . . clean engines cut maintenance and repair bills.

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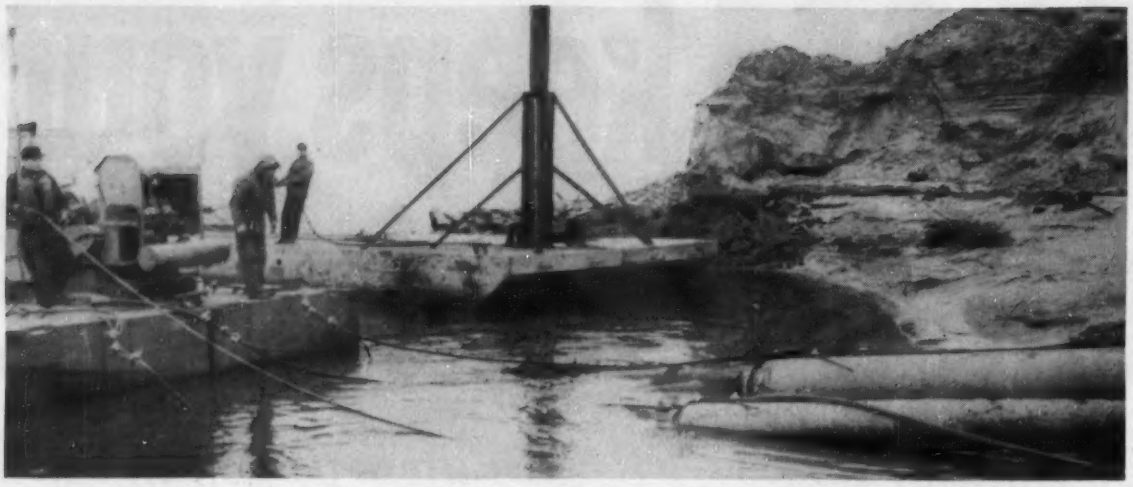
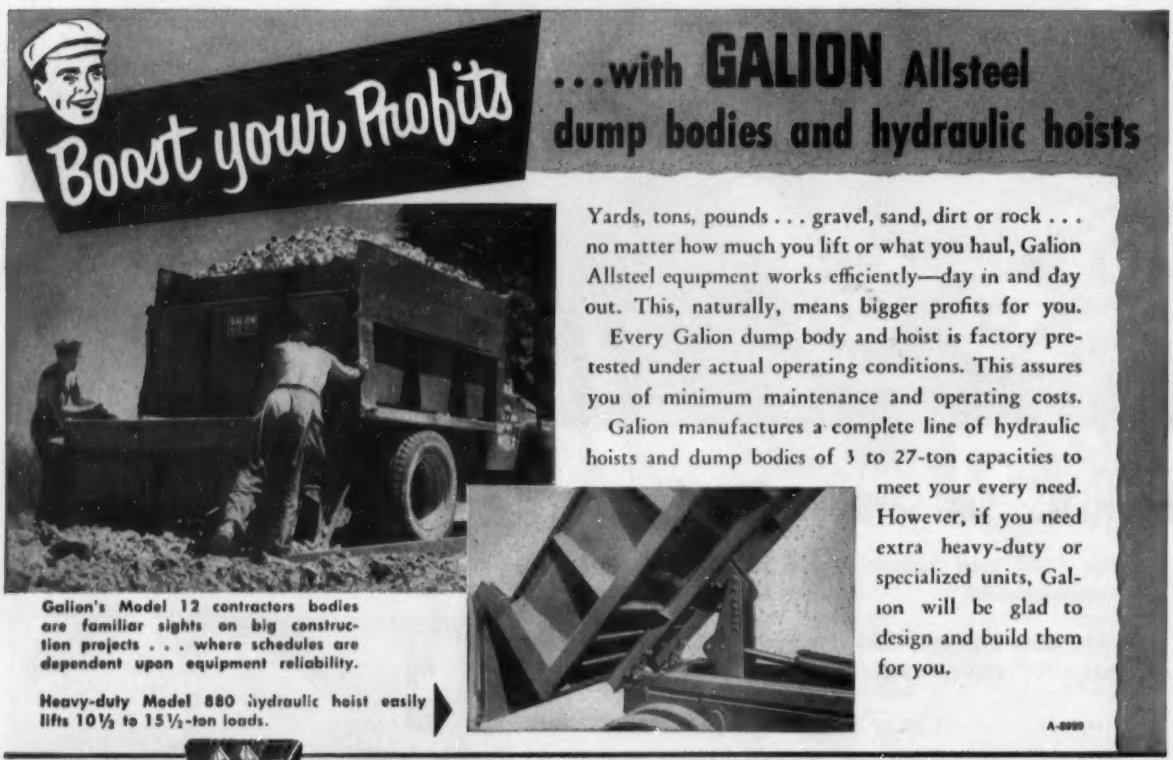


PIPELINES ARE LAUNCHED, and auxiliary cable is passed to winch barge (left) that will hold nose of pipe off bottom while it is being pulled beneath river. At rear is survey barge whose 80-ft steel spuds, raised or lowered by winch, will hold it on line.

them at this distance during the pull, special pipe sleeves were fabricated and bolted to the line every 80 ft, and transverse spacers of 6-in. channel were tied with No. 9 wire to the top of the sleeves. A ¾-in. trip cable was placed the entire length of each pipe. These trippers were run beneath the tie wires and were connected to each spacer by short lengths of cable. Thus, when the trip cable was manipulated after the pipe was pulled, the wire ties would be broken and the spacers recovered.

The trip cable also ran beneath No. 9 wire ties that held pontoons to the double pipeline. Each pontoon had a net 1,600-lb lift, and they were placed so as to reduce the negative buoyancy of the pipeline to 61 lb per lin ft.

To pull the pipes across the Delaware, one 50-ton and two 80-ton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...with GALION Allsteel dump bodies and hydraulic hoists
Yards, tons, pounds . . . gravel, sand, dirt or rock . . . no matter how much you lift or what you haul, Galion Allsteel equipment works efficiently—day in and day out. This, naturally, means bigger profits for you.
Every Galion dump body and hoist is factory pretested under actual operating conditions. This assures you of minimum maintenance and operating costs.
Galion manufactures a complete line of hydraulic hoists and dump bodies of 3 to 27-ton capacities to meet your every need. However, if you need extra heavy-duty or specialized units, Galion will be glad to design and build them for you.
Galion's Model 12 contractors bodies are familiar sights on big construction projects . . . where schedules are dependent upon equipment reliability.
Heavy-duty Model 880 hydraulic hoist easily lifts 10½ to 15½-ton loads.
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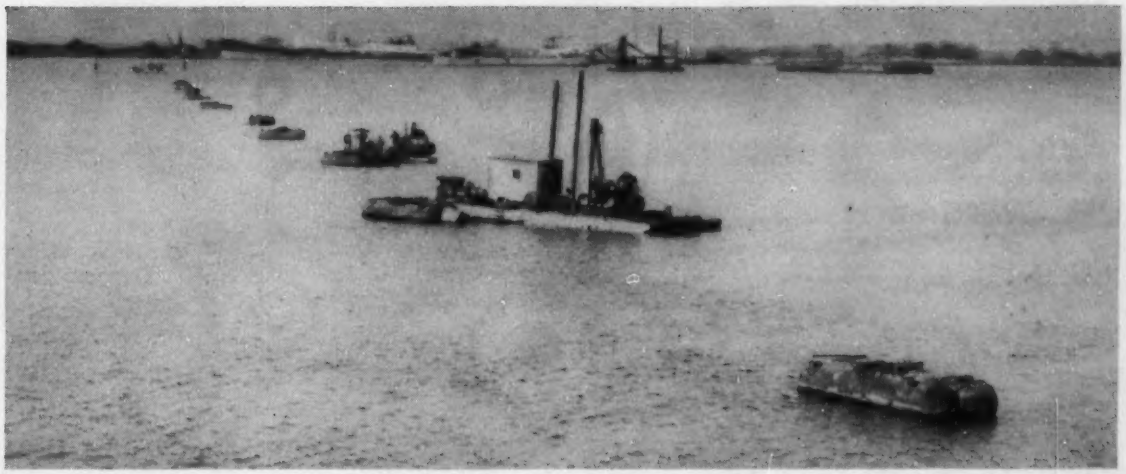
THE GALION ALLSTEEL BODY COMPANY • GALION, OHIO



PONTOONS ARE ADDED to supply extra buoyancy after the pipeline got stuck in the mud during the pull. These 4x14-ft auxiliary tanks are cabled to pipes by diver, and are cinched down at low tide. High tide raises them to lift pipeline free of the bottom.

winches, all single drum units, were set up 650 ft back from the Pennsylvania shoreline. They were anchored by 4-ft dia log deadmen buried 15 ft deep.

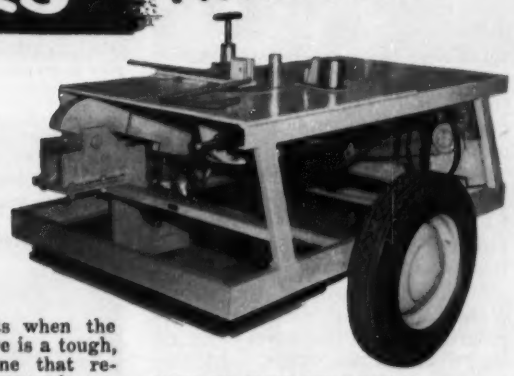
A 1¾-in. cable ran from the winches to a heavy cross-braced pulling head attached to the double pipelines. The cable was socketed in 600-ft lengths to allow removal from a winch drum and thus obtain maximum pull from the winch. Another cable, from a winch mounted on two 8x26-ft steel barges, was attached to the pulling head to keep the nose of the pipes up during the pull.

After 2,000 ft of the double pipeline had been pulled over the mudflat area, the nose was lowered to go down the slope into deep water. But the nose buried itself, and the pulling cable broke. Before another pull was made, this 2,000 ft of line had to be lightened by additional pontoons.

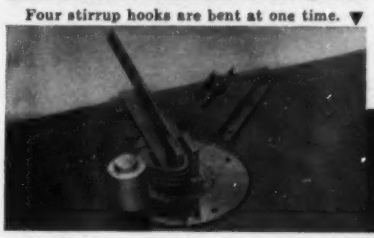
Two 4x14-ft pontoons were

CONTRACTORS "THIS IS IT"

The IRON MAN
Hydraulic-Portable
ROD BENDER AND SHEAR



▲ Hydraulic disc forces bend in four ½" rods.
Four stirrup hooks are bent at one time. ▼



WHAT IT IS:
You have a jump on costs when the IRON MAN takes over. Here is a tough, automatic, precision machine that reduces re-rod fabrication to seconds—on the job, where and when you want it.

WHAT IT DOES:
It works on location—tailors your metal to on the job needs, sheared to length, formed accurately to specifications in rods-per-minute volume. It earns extra profits for you.

WITH ALL THESE ADVANTAGES:

It's Durable!	It Cuts Costs!
It's Portable!	It Works Fast!
It's Hydraulic!	It's Accurate!
It's Automatic!	It's Efficient!

WRITE FOR FURTHER INFORMATION
Here's the only machine combining bending and shearing in a single portable unit. Mail this coupon today.

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Please furnish specifications, net prices and shipping information on the IRON MAN.

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International Distributors
Central Trust Bldg., Altoona, Pa. Tel. 3-7911
Mfd. by Livingston Machine & Tool Co., Inc., Frostburg, Md.

PULLING CABLE IS UNDER-RUN by barge with seagoing sideboom after each 600-ft pull to make sure that cable lies fair in the trench.

PONTOONS ARE RECOVERED after lines are across. Placed so as to reduce pipes' weight to 15-20 lb per ft, each has 1,600-lb lift.

added every 200 ft of the already submerged section of pipeline to give extra buoyancy. Cables from these pontoons were run beneath the pipes by divers and were cinched down at low tide. Then, when the tide rose, it supplied the required lift. Additional smaller pontoons were placed on the sections of pipe still on shore to reduce their negative buoyancy to 15 to 20 lb per ft. Also, two more pulling cables (1¼- and 1½-in.) were run from the pulling head to the winches for safety, and a more-powerful lifting winch was set on the barge to hold up the nose.

Then the pull was resumed. As the 4x14-ft pontoons approached deep water, the clips on their attachment cables were loosened and the cable rendered through them. These extra pontoons were freed from the pipeline whenever the pull was stopped to remove a 600-ft section of pulling cable.

When the pipelines were completely across the river, two barge-mounted winch units worked their way over the line. These pulled up the trip cable to break the No. 9 tie wires and retrieve the pipe spacers and pontoons.

After a final hydrostatic test of 1,200 psi, a survey by an Army Engineer diver showed the lines to be 2 to 4 ft deeper than required. Then 250,000 cu yd of dredged material was placed to bury the deep 3,500-ft section of line in 15 ft of backfill to complete the dual pipeline crossing.

Prime contractor for the work was Missouri Valley Dredging Co., Omaha, Neb. Supervisors on the job included Joe G. McMaken, president; Virgil M. Bull, vice-president; Eldon Sumrall, pipeline superintendent; Charles Hobbs, superintendent; and Andy Person and the author, engineers. Subcontractors were American Dredging Co., Philadelphia (dredging); Acme Pipelines Construction Co., Philadelphia (welding and field coating of joints); Gates Bros. Marine Service, Little Ferry, N. J. (patrol boat).

GEAR IS LANDED at completion of pulling job, and water spills from tail end of 12-in. pipe in preparation for hydrostatic test. Bulldozer will build protective dike here.

PIPELINES ARE HYDROSTATICALLY TESTED to 1,200 psi after landing. They had to come ashore through old dock area filled with abandoned piling (rear).—All photos by Fotobar

HARD-FACING TRICKS that pay off with Longer Equipment Life

Life of almost all wearing parts—on tractors, bulldozers, power shovels and other heavy construction equipment can be doubled by Stoody hard-facing. Maximum increases always result when correct procedures are employed.

WHEN REBUILDING WORN DRIVE TUMBLERS

First determine the base metal. Rebuild manganese steel with Stoody Nickel or Moly Manganese. If tumbler is high carbon steel, rebuild with Stoody Build-Up. Bring back to final size with an overlay of Stoody 1027—chosen because of good wear resistance on metal to metal friction and high impact strength. (We're often asked if a hard-faced part won't cause faster wear on the mating element. Answer is no. Because hard-faced parts retain original shape far longer, they mate more perfectly with opposite members, reducing wear on each. Also, since a lower coefficient of friction exists between alloy and steel, life of both parts is actually extended.)

WHERE TO HARD-FACE

Note the wear pattern on your old drive tumblers and hard-face accordingly. Usual points are on tops and pressure faces of lugs; occasionally along tumbler periphery. NOTE: It is essential to keep both faces of lugs aligned on each side of the tumbler to equalize wear. Make a template for the purpose.

SIMPLIFYING THE OPERATION

Faster, easier hard-facing is possible if tumbler is mounted on a jig and rotated for down-hand welding, although tumblers can, if necessary, be touched up while still on the shovel.

This and other hard-facing applications are fully described in the Stoody Hard-Facing Guidebook.

Ask your Stoody Dealer for a copy (see the yellow pages of your phone book) or write direct.

STOODY COMPANY

When the chips are down -

bet with a BUTLER BIN PLANT

You can bid yourself *into* the market with a Butler Roadbuilders Plant and finish every job with a pocket-patting profit.

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How? No space to describe those features here. But write for Bulletin 205. Read it and convince *yourself* that your BUTLER-based bid will be successful — *and Profitable!*

This is Bulletin 205. Up-to-the-minute information you should have (even if you've already decided to "buy BUTLER"). Write for Bulletin 205, now.

BUTLER BIN CO.

949 Blackstone Ave, Waukesha, Wisconsin

Caterpillar Backs Used Equipment

ANNUAL SALES of many million dollars worth of used construction equipment are expected to grow out of the "Bonded Buy" sales and service program the Caterpillar Tractor Co. is offering through its dealers.

Under the Bonded Buy sales plan, purchasers of a machine will be assured that it is fully guaranteed against defective parts for 30 days. The written guarantee is backed by a master bond issued by the Travelers Indemnity Co. Should a dealer fail to meet his obligation under the bond, the surety company will make good any legitimate claim. The dealer's obligation is limited to the price of the machine, up to a maximum of $10,000. Machines sold under this plan carry the dealer's written agreement to replace without charge for parts and labor any parts that prove defective under normal use within 30 days after date of sale.

Dealer Selects

Bonded Buy agreements apply only to selected Caterpillar-built equipment—but will include attachments of any make on the machine at time of sale. Each dealer selects the machines he wants to offer under the bonded plan. Caterpillar officials expect the new approach to direct public attention to Cat dealers as sources of reliable used construction equipment and to make Cat dealer used equipment sales programs more uniform. It is hoped that lenders who help to finance used equipment shall be encouraged by the added security brought by the bonded surety.

Caterpillar dealers also are offering two other sales agreements: "Certified Buy" and "Buy and Try." The first category will include machines not qualifying under Bonded Buy but carrying a dealer's written guarantee on terms to fit a particular machine. Buy and Try is a term for purchases where the buyer takes the equipment on an on-approval basis. Under these plans the dealer may offer any make of equipment.

COMING . . . in July
Equipment-Maintenance Directory

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See The Complete New Line of

"QUICK-WAY" Truck Shovels

Reg. U.S. Pat. Off.

Offering Sensational Engineering Advancements with Traditional "Quick-Way" Simplicity of Design, Interchangeability of Parts, and Rugged Construction

New Features—Models L2 and E2

NEW FULL VISION CAB • All Steel, with safety glass. 360° vision. Controlled ventilation. More comfort.

NEW CLUTCHES • Reversible shoe, improved "roll-in," self-energizing, single adjustment type. All interchangeable.

NEW BRAKES • Automotive type pedal action. Increased leverage. Positive effortless braking power.

NEW CENTER PIN THRUST WASHERS • Heat treated. Encased in oil tight pans. Long life and easy swing due to submerged lubrication in light weight oil.

NEW SWING ROLLERS AND SWING ROLLER PINS • The conical, high alloy steel swing roller and roller pin diameters have been increased. All four rollers and pins are interchangeable and easily removable. Hardened rollers and pins on Model L2 equipped with large, permanently lubricated ball bearings, Model E2 equipped with large antifriction phosphor bronze bushings and both with submerged center pin thrust washers give the operator smooth, easy, effortless swing. (Hardened rollers and pins with permanently lubricated ball bearings available for Model E2 at extra cost.)

NEW GEAR PANS • New design oiltight pans encase engine, jack shaft, and main hoist drive gears.

NEW CONTROL CABINET • New design with independent self-filling hydraulic cylinders on each control line. Due to increased leverages in the hydraulic application, greater pressure is transmitted with less effort. Improved clutch lock-in system.

NEW CONTROLS • All control levers, large brake pedals, clutch throwout lever, house lock lever, throttle, etc., have been conveniently grouped with the operator's comfort and additional ease of operation in mind.

NEW HOUSE LOCK CONTROL • New foolproof and positive over-center house lock control. Designed for greater ease of handling and conveniently located for operator.

NEW SET-BACK GANTRY • Bridge type, all-welded construction. Allows better vision, makes crane work easier.

NEW FLOOR FRAMES,
NEW SIDE FRAMES,
NEW COUNTERWEIGHT.

CAPACITY • Model L2: ½ cu. yd., 10 ton crane. Model E2: 4/10 cu. yd., 7½ ton crane.

New Features—Model S2 & J2

Now equipped with NEW BRAKES, NEW CONTROL CABINET, NEW CONTROLS as described above, and NEW CLUTCHES with new increased fulcrum leverage insuring easy energizing clutch action with less effort to the operator.

CAPACITY • Model S2; ⅓ cu. yd., 5 ton crane. Model J2: ¼ cu. yd., 3 ton crane.

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Trench Hoe	Pile Driver
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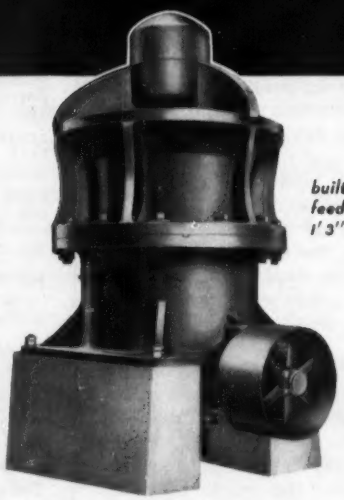

built in 6 sizes feed openings 1' 3" to 5' 6"

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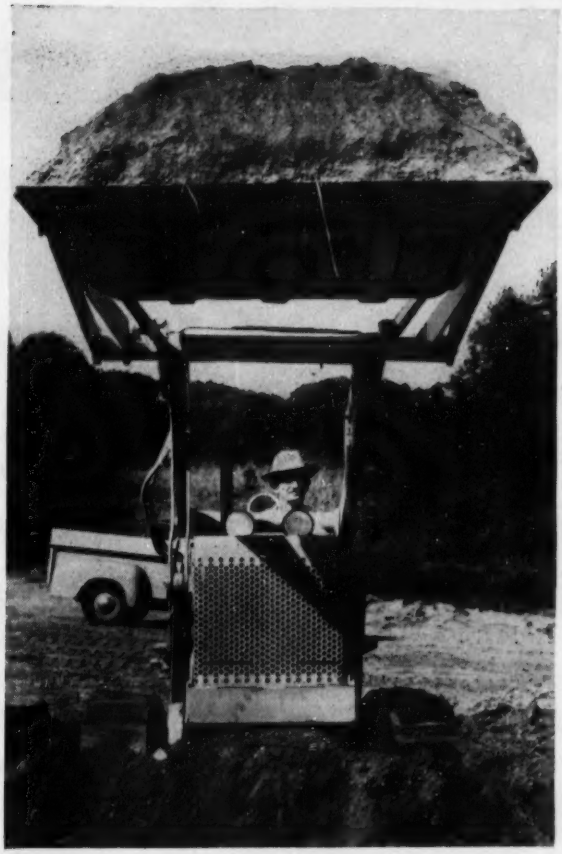
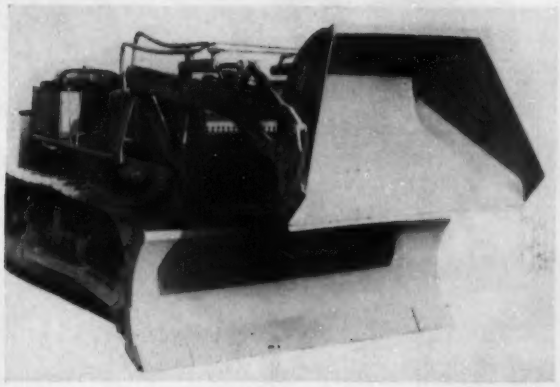
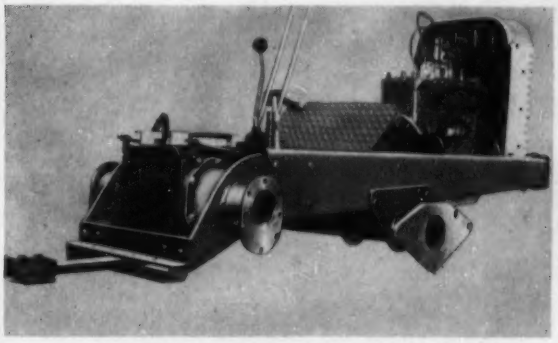


POWERFUL SMALL-SIZED TRACTOR, the Terratrac GT-30 is the holder of a world's record in drawbar pull in relation to weight. A variety of attachments makes it a versatile tool.



LOADER-DOZER COMBINATION should appeal to the small contractor both from price and production standards. The shovel is ¾ cu yd, and the blades are up to 7 ft 4 in.



TERRATRAC DRAWBARS pull from a heavy transverse torque tube attached to the engine frame. It's claimed the pull is around the engine and transmission, not through them.

The Terratrac...Has Promise to Be a Champion

Another Equipment Development Report

By RALPH H. LEWIS, Associate Editor

IT'S A POWERFUL MIDDLEWEIGHT, this Terratrac crawler tractor manufactured by American Tractor Corporation, Churubusco (near Ft. Wayne) Ind., a concern just 5 yr old.

But already this tough tractor has shown it's a pretty rugged customer by whipping the pants off of well-known competitive tractors, both wheel- and track-type in an official University of Nebraska test No. 471 by pulling 101% of its own weight. Up until this test, the best any competitive tractor, according to American, could do was 99.6%. It can pull like a team of mules, yet is so well-engineered and designed that one man can put his shoulder against the rear of the 3,700-lb tractor and nudge it down a concrete ramp.

The firm supplies two basic models—the GT-30 and GT-34, but by adding different attachments it offers 18 different variations ranging from 25.8 to 30 hp. Prices range from $2,400 to $6,700. Attachments offered are dozer blades, straight or angle, from 6 ft to 7 ft 4 in., a combination dozer and front-end loader—the latter in ½-, ⅝- or ¾-cu yd capacity, a material handling rig with forks, blade or loader which operates from a modified unit off the rear with 9- or 12-ft masts, capable of lifting 3,000 lb to a height of 144 in. The different models are apt to be confusing until you learn only two basic models are involved. The model can be obtained with Continental gasoline or diesel engines, models F-140, F-162 or GD-157.

The tractor uses a Rockford 9RM transmission and provides 3 speeds forward from 1.74 to 4.61 mph.

The dimensions will vary according to the model, but lengths run from 95 to 98 in.; widths from 46 to 85 in. and heights 51-53 in.

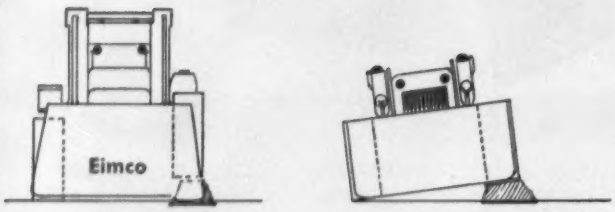
Ground clearances will average about 16 in.

The number of shoes per track varies from 29 to 31 and the ground contact area, depending on the size

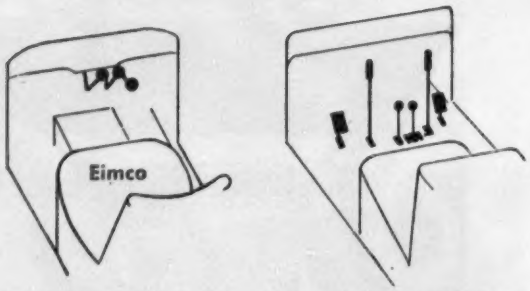
(Continued on page 142)

EIMCO

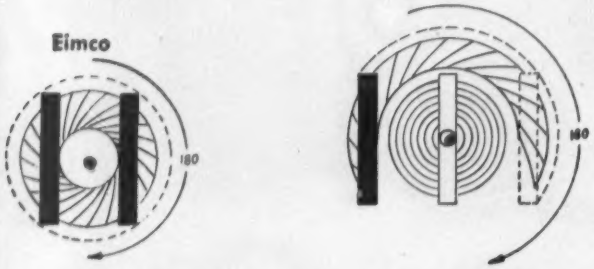
WORLD'S FINEST TRACTOR LOADER



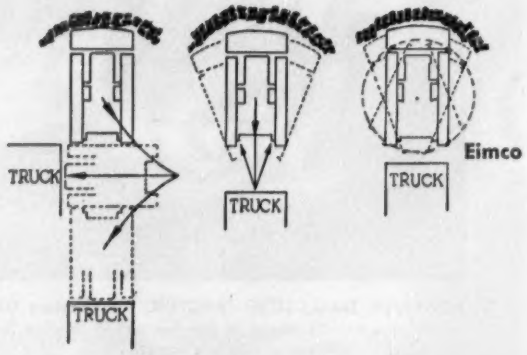
OSCILLATION — with loader attachment — exclusive on Eimco 105, this feature permits better loading on uneven floors in pits or stripping operations.



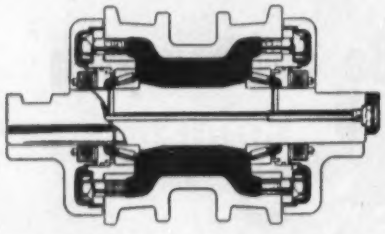
EASY SIMPLE CONTROLS — Eimco's easy finger tip controls give better maneuverability with less effort. Change speeds without stopping — instant reverse.



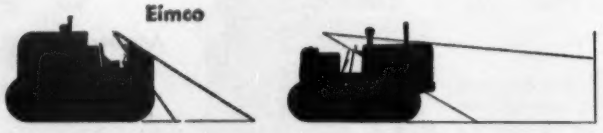
INDEPENDENT TRACK OPERATION — In a turn one track runs forward, the other reverse, cutting turning radius to a minimum. Eliminates excessive wear on track, rollers, idlers and track frame. On most machines one side is locked and skidded for a sharp turn.



MANEUVERABILITY — Faster loading into haulage units because of Eimco's overhead loading action and independently controlled tracks. Note trucks can be kept closer, cutting haulage time.



THE EIMCO 105 TRACK ROLLER — A one piece cast alloy steel roller with bearing cages and husky shaft on Timken roller bearings completely sealed against dirt and moisture. Careful heat treatment prolongs life and maximum grease capacity assures lubrication.



BETTER VISIBILITY — The operator sits up front where he can see. Loading, bulldozing or pushing are more efficient, eliminate guesswork.

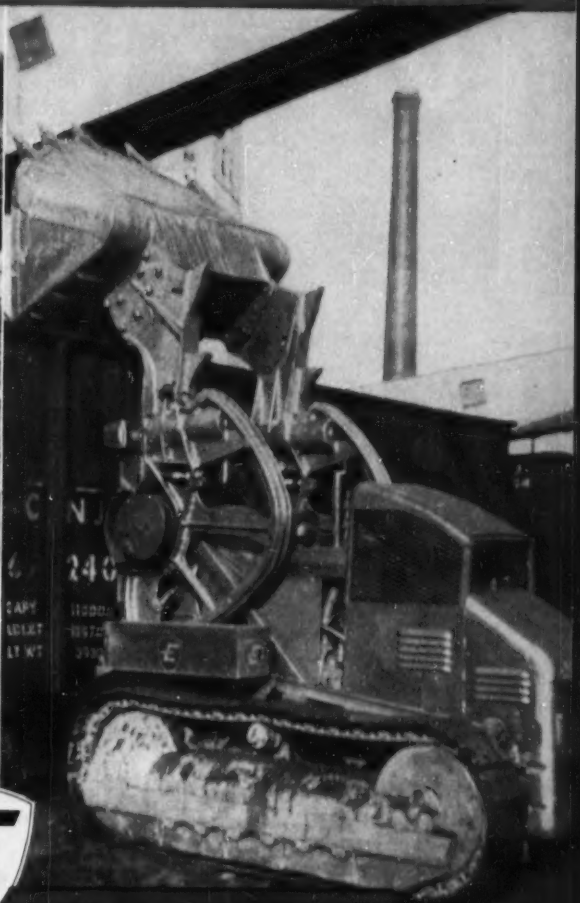
Every feature of the Eimco 105 is designed for maximum customer service with minimum maintenance. One of these features is the full oscillating track EVEN WITH THE LOADER ATTACHMENT. This is an exclusive feature on the Eimco 105 since standard practice in the construction field is to tie the tracks rigidly when a loader is mounted on any tractor unit.

The full oscillating feature prevents excessive frame twist, wear on tracks, rollers, and idlers. Traveling on uneven ground the heavy equalizer bar supports the front end of the tractor and rides freely in its universal type socket in each track roller frame so that either track is free to move up or down without tilting the engine or frame.

This feature provides maximum ground contact under all conditions and maximum drive which is essential in good digging and loading.

Write for information to The Eimco Corporation, P. O. Box 300, Salt Lake City, Utah.

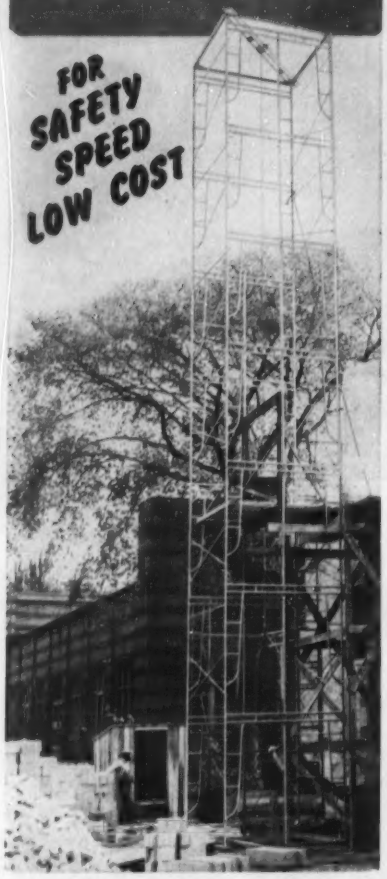
Above left: Eimco 105 digs in stock pile of chunky limestone. Above right: Two speed bucket mechanism loads light trucks easily and fills big trucks full. Below left: Loading rock from pit. Bottom: Clearing slide area after heavy rain. Below right: High discharge loads into high railroad cars.



THE EIMCO CORPORATION

YOU CAN COUNT ON BIL-JAX HOISTING TOWER

FOR SAFETY SPEED LOW COST



"Open Stock" Design Lets You SAVE In Many Ways!

Ideal for many purposes. Easy to erect, dismantle... heights up to 100 feet . . . loads to 4000 lbs. Standard sections may also be used for scaffolding, sidewalk bridging and the like.

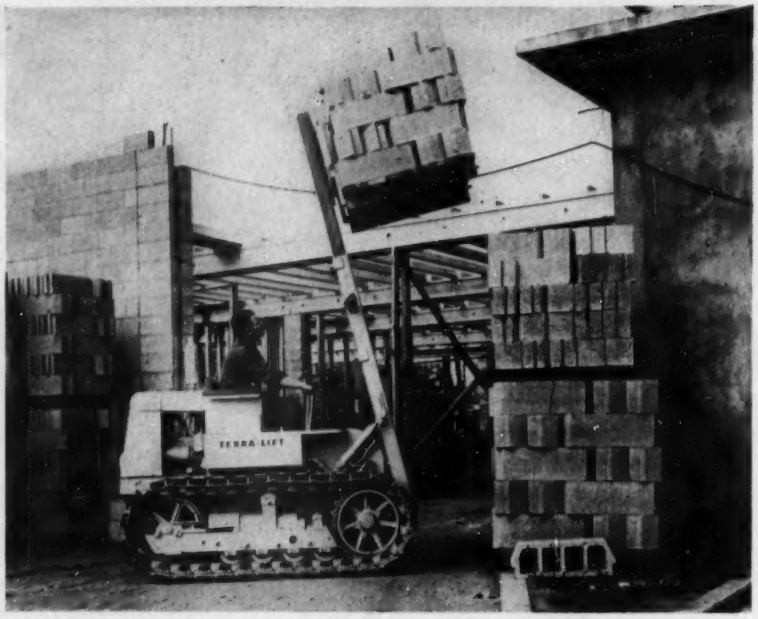
OTHER BIL-JAX EQUIPMENT—Steel scaffolding, steel ladders, ladder jacks, putlogs, leveling jacks, scaffold brackets . . . accessories.

RENT OR BUY—Distributors in principal cities.

Write for catalog. Address Dept. B-5

Export Office: 80 Broad St., New York 4, N. Y.
West Coast: 216 W. Los Feliz Rd., Glendale, Calif.

BIL-JAX INC. Archbold, Ohio



ANOTHER MODEL of the Terratrac is this material handler which is available with either 9- or 12-ft masts. This model comes with dozer, bucket, fork lift or logging jaws.

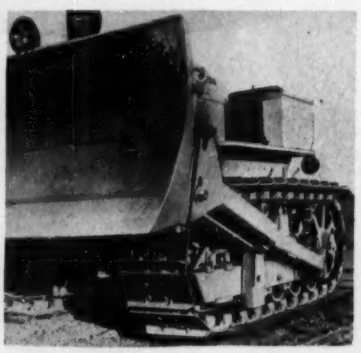
shoe from 1,060 to 1,368 sq. in.

Weights run from 3,700 to 8,200 lb.

American's engineers have worked out several interesting innovations on its tractor. One is a heavy, stiff transverse torque tube which is attached underneath the engine frame at the center of gravity. All attachments operate from this tube or shaft—the drawbar pulls from this tube, eliminating shock or stress on the transmission case or engine. The pull is claimed to be around the engine and transmission, not through them. It is claimed also that this arrangement helps eliminate heel and toe pull on the front end.

Another development American claims to be unusual is a hinge arrangement on the bucket of the front-end loader. This hinge permits better control in digging and backfilling operations, and at the same time reduces the stresses on both bucket and hydraulic cylinder.

One rig American has is a combination front-end loader and a dozer. The dozer can be used with the bucket attached, but not the bucket with the dozer attached. The dozer can be attached or removed in 5 min by removing 4 bolts. One man can make this change. Arm stops prevent the bucket from dropping into the dozer blade during dozer operations. These stops are removed for loader operations. Surprisingly enough, with both dozer and loader attached, operator visibility is excellent.



STEEL GROUSERS, flat street plates, snow and ice grousers or rubber shoes are optional equipment on this handy tractor.

The loader-dozer equipment combination for the GT-34 weighs slightly more than 3,100 lb. The bucket is wider than the over-all width of the tractor and is tapered to permit the roll-over of material, as the bucket fills. This action is similar to that of a moldboard plow that turns over a furrow. This action keeps the material in a loose form, without packing and permits easy discharge.

Another feature American claims is important is the method of keeping dirt and abrasive material out of track rollers. Instead of using conventional seals, they install a rawhide seal in an inverted position

(Continued on page 144)

ATOMIC ENERGY PROJECT MOVES AHEAD WITH GRADALLS!

Gradall's positive down pressure and controlled "arm" and "wrist" action of boom and bucket make it possible to dig straight down inside wooden patterns. No other machine could do this job accurately!

GRADALL PAYS OFF FOR THESE LEADING CONTRACTORS

PETER KIEWIT SONS' CO.
Contractors
OMAHA, NEBRASKA

PENKER CONSTRUCTION CO.
CINCINNATI, OHIO

TOMLINSON & GOODWIN CONSTRUCTION CO.
PORTSMOUTH, OHIO

SANDY J. PHILLIPS INC.
LUCASVILLE, OHIO

EICHLEAY CORPORATION
PITTSBURGH, PENNSYLVANIA

EXCAVATING for the Atomic Energy Commission Project near Portsmouth, Ohio, is moving ahead with Gradalls working on several separate contracts.

Most important of the many jobs handled by the Gradalls is the accurate excavating of many thousands of footer holes for the huge buildings being erected on the site.

These holes, mostly 8 feet square and from 2 to 4 feet deep, must be dug to *exact specifications* with tolerances less than ½ inch. (Other holes range from 4 to 11 feet square, to as much as 12 feet deep.) By digging to these exacting "specs" no forms are required inside the holes—pre-built forms are simply fastened down to hold concrete above ground level.

Contractors on the project agree—these holes could not be excavated by any machine other than the Gradall. And hand labor couldn't possibly be used economically to keep up with the schedule of 20 to 40 holes per day (depending on size) handled by each Gradall.

It's the same story on many other jobs—when the work calls for accuracy as well as speed and economy, it's the man with the Gradall who gets the contract!

Dumping height to spare! Digging footers along a rail siding, the Gradall boom reaches up and out to load spoil. Gradalls are used for trenching, road maintenance and many other jobs on this project.

Gradall
DIVISION OF WARNER & SWASEY

Gradall Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

TERRATRAC HAS PROMISE . . . Continued from page 142

BLADE CAN BE DETACHED in less than 5 min by one man. Remove four bolts, block arms and back off tractor.

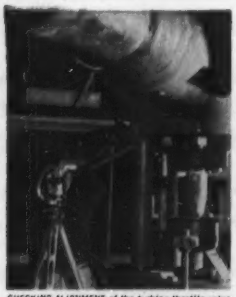
THE TERRATRAC can lift loads up to 3,000 lb, but on a recent demonstration it lifted a 4,000-lb steel beam with no trouble.

and depend on the grease seeping out to keep out unwanted abrasives. This feature requires greasing at least twice a day.

Marc B. Rojtman, 42-yr-old president says: "We're going after the small and medium size contractor market with this tractor for the simple reason we feel this category has never had a specific tool designed for him, within his price range. We're launching one of the most aggressive demonstration plans ever to be put on by a manufacturer. We feel we have to show them how the Terratrac can do more than twice the work at less initial cost per yard of capacity than even a rubber-tired industrial-type loader. Our tractors are priced far below other crawlers and are within the reach of the smallest of contractors. We've got equipment designed for industrial application and what we want is the opportunity to show and prove it."

The tractor is small, the firm is small and Churubusco is small, but on the basis of a personal visit and what we saw, American Tractor Corporation is offering a rather complete tractor and equipment line in the low-priced field—a line we believe still remains to be proved in the field under actual use.

We don't doubt that it will be proved however, as this firm is adequately staffed with competent engineers, all with experience in the industrial field, has a good manufacturing plant and facilities, is backing it up with aggressive promotion, and increasing dealer and service outlets by more than 100%. All this can add up to acceptance by the small- and medium-sized contractor.



CHECKING ALIGNMENT of the turbine throttle valve with Berger 6" Transit; grade set with Berger Level. Tolerances 1/32" in any direction.

From project base line to complete power plant installation...

Berger Instruments point the way for Stone & Webster engineers

"In laying out a power plant like this for The Hartford Electric Light Company, 1/32" is a critical dimension — whether you're establishing the initial project base line or aligning the turbine throttle valve — because all buildings and equipment must be accurately integrated into one operating unit," say the field engineers at Stone & Webster Engineering Corporation.

Berger Transits and Levels were used exclusively on this job — to meet these requirements:

All building base plates set for line and grade within a tolerance of 1/32".

Anchor bolts for coal handling equipment set to 1/16" to assure perfect fit in field erection of prefabricated sections.

Alignment and elevation of main and auxiliary steam lines set under strain within 1/16" in order that they will assume their proper position after expansion takes place when lines become operative at a temperature of 950° F. Deviation from dead level held within ±1/32".

Center lines for all equipment — piping, generators, boiler feed pumps, pulverizers, condensers, etc. — must be accurately related to one set of base lines.

Rails for 120-ton overhead bridge crane 97'6" apart must be truly parallel within 1/16" and set accurately at required distance.

Berger Instruments were on the job here, as they are on so many other Stone & Webster projects. For when the "specs" call for really close-tolerance construction, leading engineers and construction men buy Berger . . . Take one into the field and see why. *Count on quick delivery—thanks to enlarged capacity.*

C. L. Berger & Sons, Inc., 37 Williams Street, Boston 19

ESTABLISHING GRADES for setting reclaim hopper with Berger Level.

CHECKING TURBINE GENERATOR to elevation within ±1/32" with a Berger Level.

THE BEST IN SIGHT IS

BERGER

ENGINEERING AND SURVEYING INSTRUMENTS...SINCE 1871

Write for a FREE copy of "ACCURACY IN ACTION"

FULL VISION means you'll Move More with a MICHIGAN

Step into a MICHIGAN* cab, and sit in the operator's comfortable seat. Notice how easy it is to follow every move on the job. 3604 square inches of glass!—see what excellent vision is provided, in all directions and overhead.

Here, indeed, is a masterpiece of smart modern design: a truly functional cab—fully ventilated, quiet; a comfortable cab designed to make the operator's job as easy as possible. Look, also, at the outside of the cab; at the adjustable louvers on both sides for good ventilation; the sliding rear doors that make it easy to get at the engine; the rear window to complete the full-vision facility.

For an easy point-for-point comparison of the MICHIGAN with other machines, send for the MICHIGAN Fact Folio: contains full information, including an interesting book "More Yardage Through Air Power." The coupon gets prompt action.

**A Trademark of Clark Equipment Company*

CLARK EQUIPMENT

17

CLARK EQUIPMENT COMPANY
Construction Machinery Division
380 Second Street, Benton Harbor, Michigan

Please send the MICHIGAN "24" Fact Folio

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City_____ County_____ State_____

"IT'S OK! HEIL BODIES AND HOISTS HAUL BIGGER PAYLOADS AND SAVE OPERATING TIME!"

THE fast hydraulic action of Heil Hoists means faster dumping and shorter cycle time. Fast-acting hoist mechanism elevates body to over 50° dumping angle within 12 seconds after raising cycle is started. Precision-engineered cylinder raises and holds loads efficiently and dependably.

There's a Heil distributor near you to explain every Heil Body and Hoist advantage for your specific job, and supply you with prompt, dependable service and parts.

HEIL NO-SAG BODIES

Reinforced steel subframe welded integrally with the body supports the load uniformly and distributes the lifting forces of the hoist without bulging or distortion. Heil weight-saving design lets you carry bigger payloads, saves gas and tires.

ALWAYS SPECIFY HEIL

THE HEIL CO.

Dept. 254, 3002 W. MONTANA ST. • MILWAUKEE 1, WIS.

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BH-43

W. B. Greene Drops Reins At Barber-Greene Co.

KNOWN AND RESPECTED throughout the equipment and construction fields as a pioneer in material handling and asphalt paving machinery development, and for long-time promotion of bituminous roads, Wm. B. Greene, co-founder of Barber-Greene Co., Aurora, Ill., and president since 1945, has turned that office over to H. A. (Ash) Barber. He will continue as Chairman of the Board of the firm he started in 1916 with H. H. Barber.

Bill Greene has served the construction equipment industry well. He is a past president of the Construction Industry Manufacturers Association (Mfrs. Div., American Road Builders Association), and is now on the CIMA board of directors. During World War II he was an advisor to the Construction Machinery Division of the War Production Board. For the last four years he has been co-chairman of the CIMA-AGC Joint Cooperative Committee.

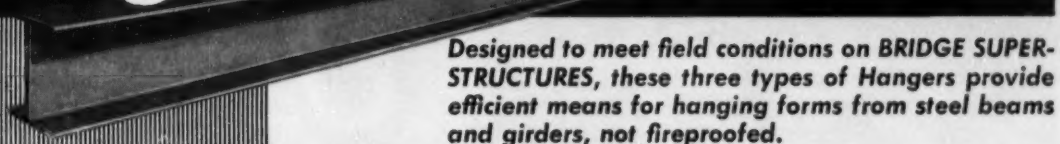
Ash Barber has been with the company since 1933, when he started as a full-time field service engineer, though he had worked in the shops during high school and college vacations. He rose through the ranks to Chief Engineer, and was named vice-president in 1937.

COMING — In July

Construction Methods and Equipment's special issue devoted to Construction Equipment Maintenance. The theme will be "Productive Maintenance."

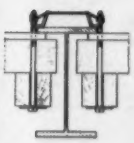
WATCH FOR IT!

SUPERIOR ACCESSORIES ON THE BEAM



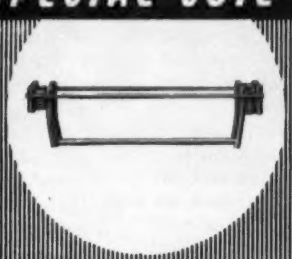
Designed to meet field conditions on BRIDGE SUPERSTRUCTURES, these three types of Hangers provide efficient means for hanging forms from steel beams and girders, not fireproofed.

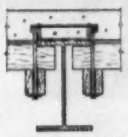
STANDARD COIL HANGER FRAME



When hanging forms where specifications do not permit any hanger wire to be exposed after stripping, use Superior *Standard* Hanger Frames. Detail at left shows their use with double ledgers, ½" coil bolts, and flat washers. Total safe load on both bolts is 10,000 lbs., or 5,000 lbs. per bolt.

SPECIAL COIL HANGER FRAME



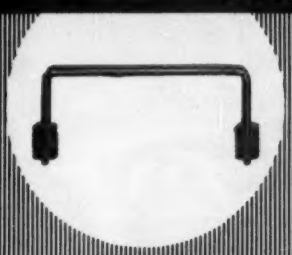


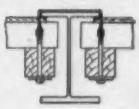
AT LOW HAUNCH

AT HIGH HAUNCH

The design of certain bridge superstructures allows for the permanent deflection of the beams or girders due to the pre-calculated dead load. This deflection is compensated by a concrete haunch on the upper flange, which varies in depth. Superior *Special* Coil Hanger Frames were developed to efficiently meet this field condition, at the same time avoiding any exposed hanger wire. The extent to which the ½" Coil Bolts are threaded into the coils allows for these varying haunch depths from maximum to zero. (See detail at left.) Total safe load per frame is 10,000 lbs., or 5,000 lbs. per ½" bolt.

COIL BEAM SADDLE





Superior Coil Beam Saddles are used, as shown at left, where hanger wires may be cut after stripping the forms. The Coil Bolts allow for any variation in lumber and flange thickness and tightening the bolts pulls the forms tightly against the flanges. Forms are easily stripped. Safe load is 6,000 lbs. per saddle, or 3,000 lbs. for each ½" Coil Bolt. Coil Beam Saddles are also furnished for ¾" and 1" bolts.

NOTE: WORKING PARTS (Bolts and Washers) are returnable. Layouts and estimates for Superior Hangers are available without cost or obligation.

SUPERIOR CONCRETE ACCESSORIES, INC.
4110 Wrightwood Avenue, Chicago 39, Illinois
New York Office: 1775 Broadway, New York 19, N. Y.
Pacific Coast Plant: 2100 Williams St., San Leandro, Calif.

FOR ADDITIONAL INFORMATION . . . Request A Copy Of 4-PAGE BULLETIN FH-2

Prestressed Bridge Beams Cast-in-Place

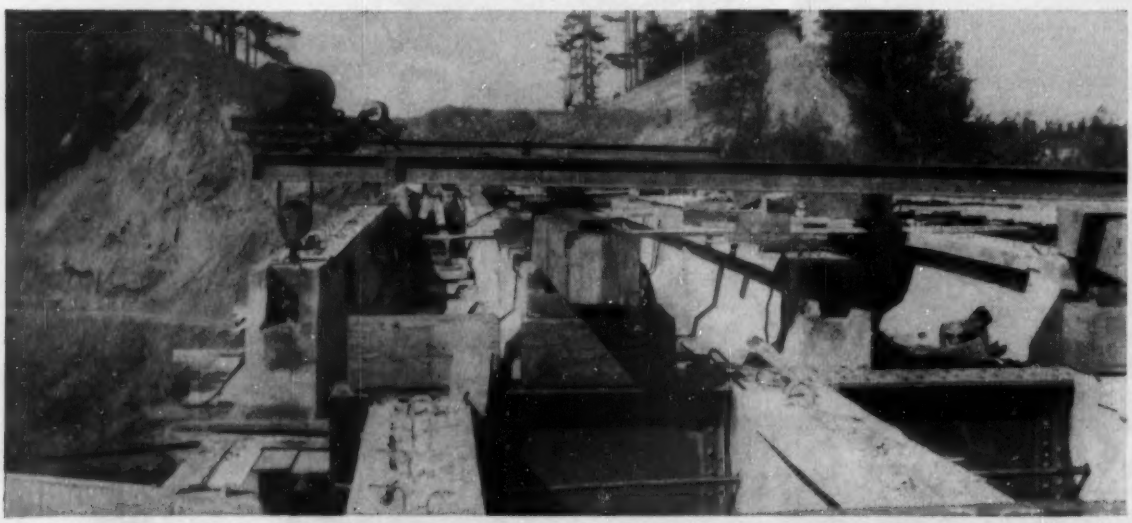
PRESTRESSED BEAMS were cast on falsework in or near final positions on this 423-ft highway bridge. They are 60 and 40 ft long and had to be cast in "offset" positions to leave room for wire tensioning operations at each end before they could be abutted.

CAST-IN-PLACE prestressed concrete beams for a highway bridge in Oregon have given the contractor a neat saving in handling costs and have made it possible to construct the bridge without bringing in heavy equipment.

Purpose of the 423-ft bridge is to take the scenic coast highway, US 101, across the Southern Pacific Railroad, Ten Mile Creek and two approach roads near Coos Bay. The bridge has eight spans, four each of 45 and 60 ft. Each 60-ft beam weighed 28,800 lb and the 45-footers weighed 17,700 lb each.

The contractor, Snook Brothers of Corvallis, elected to cast all the beams (a total of 56) on falsework in or near final positions. This decision was influenced by the fact that there was no working space at either end of the structure. One approach is over a 30-ft fill which could not be placed until the bridge was built and the opposite end connected with terrain requiring a deep cut. Grading sequence was such that a casting yard at bridge level could not be established at

(Continued on page 151)



HAND-POWERED 5-TON WINCH, mounted on steel wheels atop I-Beam track laid across finished beams, easily positions one beam at a time. Plate girder in foreground is only one on bridge, gives added support for spans across railroad track.

Concrete is discharged from elevator into twin hopper where Whiteman Power Buggies load up.

Power Buggies speed along runways at fast clip, handling average 10 yd. per hour on 300 ft. haul.

Highway deck slab is spread and finished to a perfect level with Whiteman Screeding Machines.

Whiteman

4 POWER BUGGIES & 2 SCREEDING MACHINES HANDLED

215 YARDS OF CONCRETE PER DAY!

A tough assignment . . . delivering and pouring concrete for a highway 23 to 31 feet above heavy traffic. Yet it was done smoothly, efficiently on Manhattan's East River waterfront through the use of Whiteman Power Buggies. Operating over portable wood runways, four Power Buggies handled from 180 to 250 cu. yds. of concrete in a 5 to 6 hour period, averaging better than 40 yds. per hour on an average 300 foot haul.

Spreading and finishing concrete for the highway deck was done in record time by two Whiteman Screeding Machines* covering a 37½ ft. wide slab pour . . saving time, compacting the slab, bringing moisture to the surface and screeding to a perfect level.

Whatever your problems in placing and finishing concrete, call your Whiteman distributor for helpful information.

*Approved by New York State Highway Engineers

General Contractor: Fellheimer & Wilcox Co. Subcontractor for concrete decks: Euclid Contracting Corp.

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

WHITEMAN MFG. CO., DEPT. C
3249 Casitas Ave., Los Angeles 39, Calif.
Please send prices, literature and name of distributor for ☐ Screeding Machines. ☐ Power Buggy ☐ Floating Finishing Machines.

Name_____
Firm_____
Address_____
City_____ Zone____ State____

CONTRACTORS

HERE'S A TOOL THAT GIVES YOU NEW

PROFIT-POSSIBILITIES!

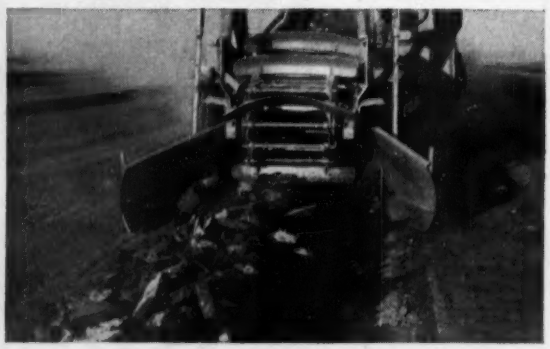
THE *Athey* PORTABLE BREAKER

Reclaimix Engineers Corporation, Los Angeles, rebuilt the parking strips at the Santa Ana Airport, using the Athey Method. A Cat No. 12 Motor Grader scarified the bituminous surface and windrowed the material.

Now you can rebuild blacktop, asphalt or other bituminous surfaces at a price that will get the job and that will insure you a good profit. These jobs have previously been passed by because of prohibitive material costs.

The tool that puts these jobs in your grasp is the Athey Portable Breaker. The Breaker teams with the Athey Force-Feed Loader to make old surfacing materials reusable. This process includes the use of the Athey Breaker and Loader and equipment you already own.

First, the old surface is scarified with ripper or motor grader and bladed into 10″-12″ windrows. Then the Force-Feed Loader picks up the chunky debris and feeds it to the towed Portable Breaker. Here the pieces are reduced in a hammermill-type breaker to any desired gradation, from ½″ to 2″, at the rate of 50-200 tons an hour, depending upon the material. The broken material and fines are returned to the ground in even windrows. A shot of new oil, asphalt or other binder makes the material like new. Spread it with a grader, roll it and the surface produced is as smooth and tough as it was originally. A 20-foot wide, 3-inch mat, one mile long has been rebuilt for *as little as $820!*



The chunky material (shown above) was picked up by a Force-Feed Loader, fed to the Breaker and returned to subgrade in the usable form shown below. The material was then "shot" with Reclaimix solvent, making it ready for relaying into a new, long-lasting surface. The Force-Feed Loader and Portable Breaker are engineered as a team and are matching in capacity. The Loader can be used for 1001 other tasks to keep costs at a minimum.

Look around your territory for parking areas, airstrips, roads or other surfaced areas that need rebuilding. Every job can be done at low cost, and high profit, with an Athey Force-Feed Loader —Portable Breaker team.

Ask your Athey-Caterpillar Dealer to give you the profitable facts on the Athey Method of renewing bituminous or gravel surfaces, or write direct for free information to

Athey PRODUCTS CORPORATION

5631 West 65th Street — Chicago 38, Illinois

BEAMS CAST IN PLACE . . .

Continued from page 148

either end. If possible, it would have been a simple job to roll completed prestressed beams into position across the bridge piers.

For each alternate span, beams were cast and stressed in the positions they were to occupy when the bridge was completed. To perform post-tensioning operations, requiring work at both ends, it was necessary that one-half of the beams be kept to one side of final position.

After all beams were ready, those cast in the off position were placed easily by hand-operated equipment. Two pair of 6-in. I-beams were blocked up on two of the concrete beams, the I-beams running in a direction transverse to the concrete beams and supported on a system of rollers which permitted movement of the I-beams in a direction parallel to the concrete beams.

A hand-powered 5-ton winch, mounted on steel wheels and placed on top of the I-beams, provided the lifting power.

The 45-ft beams contained four 1⅛-in. dia rods. Two of the rods, held in a parabolic position, were placed on the vertical center line of the beam, and the other two were placed in the bottom flange of the beam 4 in. each side of center. The two bars on center were tensioned first. To avoid inducing excessive post-tensioning stresses in the concrete, both bottom bars were tensioned simultaneously.

The 60-ft beams were of similar design except that four rods were placed on the vertical centerline of the beam, and these were tensioned first. The two bottom bars were not required to be tensioned simultaneously, as one bar produced in these beams only 16% of the total tensioning load, and this was not enough to produce excessive concrete stresses.

Plans called for precasting of all diaphragms but, at the contractor's request, all diaphragms were cast-in-place. Each diaphragm contained one 1-in. Stressteel rod which was tensioned to 52,300 lb.

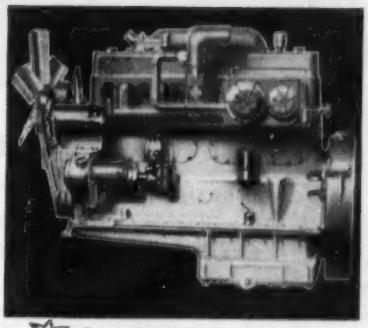
The Ten Mile Creek grading and bridge project was constructed by the U. S. Bureau of Public Roads. General contractor was Slate and Hall of Portland, and the bridge work was subcontracted by Snook Brothers. For the Bureau, William H. Lynch is division engineer and R. A. Mack is resident engineer.

RALPH KRESS, Exec. V. P. & G. M. of Dart Truck Co., has created a heavy-duty truck of new design, Waukesha Super Duty Six powered

new design FOR HEAVY DUTY

POWERED BY WAUKESHA

Utilizing the full power of its Waukesha 6-WAKR Butane Engine for driving—the newly designed 30-ton Dart 35-SA End-Dump Truck is most unusual. All auxiliaries, including the cooling system, are driven by a smaller engine . . . a Waukesha 195-GKU. Mounting the engines amidships (centered between the wheels), and the wagon-type front axle, both exclusively Dart, give many advantages. Waukesha power means payload performance plus economy.



☆ Powering this Dart 30-tonner is this 6-WAKR Butane Super Duty Six — 6¼-in. bore x 6½-in. stroke, 1197 cu. in. displacement, 290 horsepower at 1800 rpm

Super-Duty Six 1197 CU. IN. 6-WAK Series

- 6-WAK—Gasoline Engine
- ☆ 6-WAKR—Butane Engine
- 6-WAKDB—Diesel Engine
- 6-WAKDBS—Supercharged Diesel Engine

Send for Bulletins

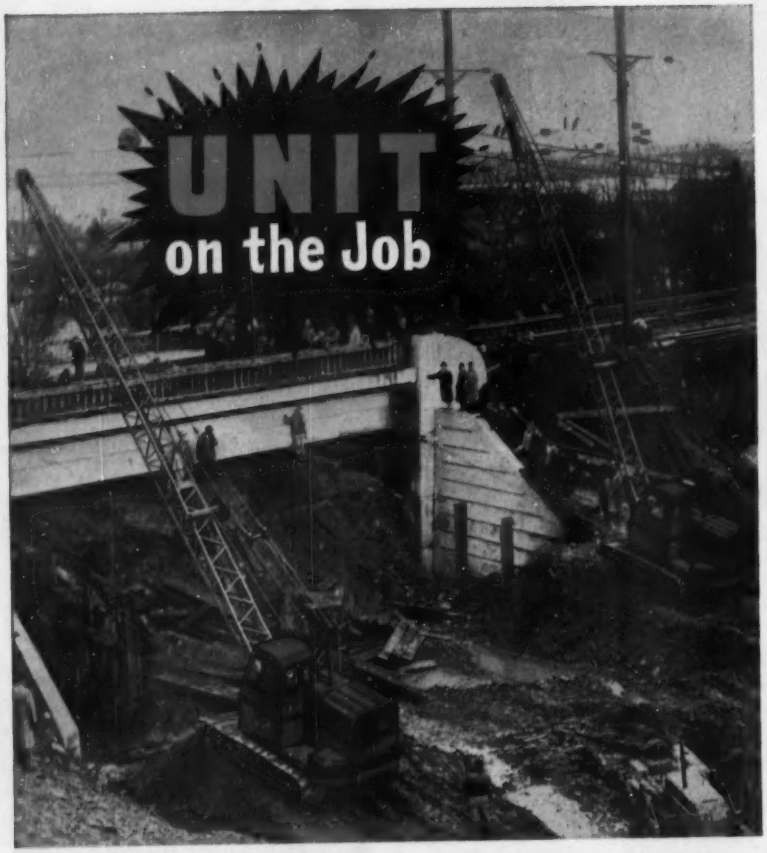
UP TO 352 MAXIMUM HORSEPOWER

Standard or Counterbalanced Crankshafts are available. Consult Waukesha on permissible speeds for your service.

238

WAUKESHA MOTOR COMPANY • WAUKESHA, WIS.

NEW YORK • TULSA • LOS ANGELES



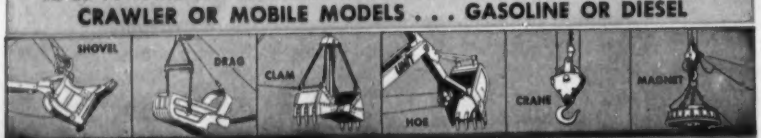
TEAMWORK and Accurate Control

Working as a team, these two UNIT 1020 Cranes moved a 500 TON railroad bridge from its temporary mounting to the new structure in a period of thirteen (13) minutes. This type of job calls for smooth and accurate control of boom and hoist line operation. UNIT'S extra long crawlers, multiple-hinged shoes, wide axles, and hook rollers provide perfect balance and stability. This, together with the FULL VISION CAB for complete visibility, makes UNIT the machine that is dependable and safe to handle efficiently any type of heavy-duty work.

SEE FOR YOURSELF: *Let us send you our novel TV Brochure. It illustrates the complete UNIT line.*

UNIT CRANE & SHOVEL CORPORATION
6305 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

On-the-Job Contractor-Labor Relations

by LEON B. KROMER, JR.

Congress and Taft-Hartley

IF THE SENATE LABOR COMMITTEE has its way there will be no strike vote before, during or after a strike starts. In reporting out the Smith Bill the committee omitted this controversial issue. It did, however, include most of the recommendations submitted by the President (CM&E Feb., p. 132), plus one to give states jurisdiction over certain labor disputes.

POINTS TO NOTE:

The bill carries the recommendation that would make legal strikes (presumably through use of a picket line) against a secondary employer (contractor) working on the same project site with another contractor with whom the union has a legal labor dispute. Under the present law this type of strike (secondary boycott) is prohibited.

Contractors and unions would be permitted to negotiate collective agreements prior to the start of work and include a provision requiring employees to join the union within seven days. This provision, essentially the amendment proposed by the late Senator Taft (CM&E June 1953, p. 174), would get around the present bar to union security provisions in agreements with the building trades due to the impossibility of conducting representation elections.

If the Senate committee amendment on jurisdiction of states in labor disputes goes through you will have state "Little Labor Relations Boards" get into the picture when you have a serious labor dispute. Under the bill as reported out of committee, state boards and courts may act in disputes even if subject to Taft-Hartley in those cases where the National Labor Relations Board declines to assert its jurisdiction even though empowered to do so.

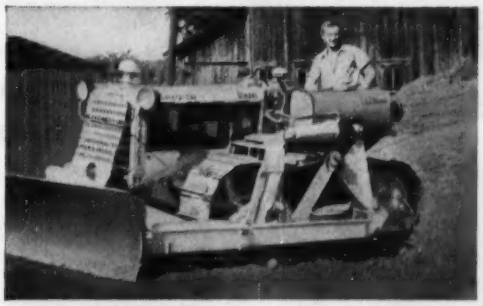
The present policy of the NLRB is to decline jurisdiction of cases which involve little or no impact on inter-state commerce. Many

(Continued on page 155)

A STORY FOR EVERY MAN WITH ROLLING STOCK

Some of the power equipment of REDICK & SONS, WOOSTER, OHIO.

SIX TROUBLE-FREE YEARS WITH CITIES SERVICE C-300 OIL!



FOR THE MAN WHO GROWS FOOD. For their trucks, cars, tractors and other power equipment, including diesel above, the Redicks use only Cities Service C-300 Motor Oil.

FOR THE MAN WHO TRANSPORTS FOOD. Albert Herda, trucker extraordinary, uses Cities Service C-300 Motor Oil in year 'round operation between Minnesota and Alaska!

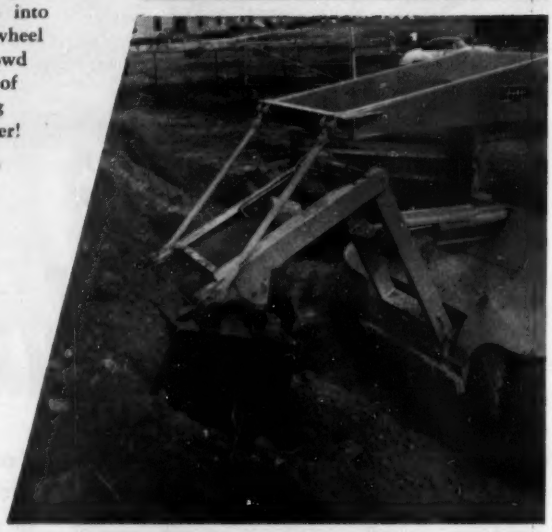
You may say, "What's a farm story doing in this magazine?"... and it's a good question Mr. Fleet Owner, or Mr. Contractor . . . a good question until you remember that much of the equipment the Redicks will use to farm 1000 acres is the same kind of equipment you use. Diesels, gasolene engines, separate power units, all with a thousand finely machined, intricate pieces of mechanism that demand the finest lubrication in the world. THAT'S WHAT THE REDICKS GET and that's what you can get in all your equipment with Cities Service Heavy Duty C-300 Motor Oil.

This great Cities Service Motor Oil serves bus fleets, truckers, farmers and construction crews throughout most of the country. Try C-300 in your operation and check mileage, wear and performance. Call the Cities Service Office nearest you or write to Cities Service Oil Company, Sixty Wall Tower, New York 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Dempster-Diggster bucket GETS A FULL LOAD WITH EVERY STROKE!



The hydraulic crowd and hoist operation of the new Dempster-Diggster GRD-101 gives you big shovel advantages in front end loading and excavation work. As shown in the at-work photos at right, here's what happens: Dempster-Diggster moves into material with shovel lowered against front of frame. No wheel traction is used to get excavation power. The hydraulic crowd and hoist moves bucket out and up following contour of material—getting a full bucket with every stroke . . . reducing loading time and idle truck time, thus getting the job done faster!

When you put your Dempster-Diggster into operation, one of the first things you will find is that your entire operation must be geared to a faster pace. This means greater efficiency of equipment and manpower—more profit to you!

Write us asking for Folder No. 3116 giving you complete information on the features of the Dempster-Diggster, including TRUCK-SPEED MOBILITY TO AND FROM JOBS . . . AUTOMATIC BUCKET TRIP . . . MAXIMUM DUMPING AND DIGGING HEIGHT . . . MINIMUM TURNING RADIUS . . . THE SHOVEL WITH TORQUE CONVERTER . . . HYDRAULIC STEERING, etc. Manufactured by Dempster Brothers, Inc.

In photo below camera catches Dempster-Diggster ready to back off and move up to a truck for loading.

DEMPSTER DIGGSTER

DEMPSTER BROTHERS 354 SHEA BLDG., KNOXVILLE 17, TENN.

LABOR . . . Continued from page 152

construction labor disputes will fall into this category. The bill would also permit states to intervene in labor disputes that endanger health or safety, provided the federal government is not already taking action under the national emergency provisions of the act.

Meanwhile, the House Labor Committee, reviewing the act section-by-section, still is voting on amendments but hopes to report out a bill for action during this session. Like the Senate committee, the proposed House bill would require employers as well as unions to file non-Communist affidavits to qualify for use of the NLRB machinery. However, the House committee has voted to require, under the national emergency provisions of the act, a pre-strike ballot at least ten days prior to the strike. Both committees agreed to prohibit the reopening of a collective agreement during its life unless expressly agreed to by both parties.

Action by the committees was spurred by letters from the President to the chairmen that indicated the administration wanted the amendments to the Taft-Hartley Act this year. Although Democrats are sure to make a strong floor fight against many of the proposals, strong pressure from the White House may result in some of the changes squeaking through this session of Congress.

Welfare Funds Under Scrutiny

As the Senate Labor Committee voted to investigate union welfare and pensions funds (Senator Ives of New York will head the special sub-committee), New York's Governor Dewey signed a bill authorizing the state insurance superintendent to check the records of all union funds. The new law says that the state superintendent of insurance may examine the books and records of such funds as often as he considers necessary but must examine them at least once every 5 yr. Administrators of these funds are required to keep accurate records in accordance with generally accepted principles of accounting. It is expected that the investigations will provide the basis of laws designed to protect the funds for their beneficiaries.

The murder of a building service local union official in Yonkers resulted in an investigation that un-

(Advertisement)

VERTICAL PRESTRESSING OF CONCRETE walls for a concrete water tank is done with a Re-Mo-Trol hydraulic jack. Six wires, which are secured in the bottom of the wall, are prestressed at one time.

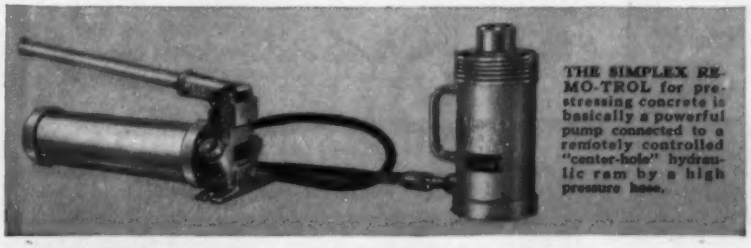
Remote-Controlled Hydraulic Puller Perfected for Prestressing Concrete

Construction Men Cite Simplex Unit for Fast, Easy Use

Tensioning cable, wires or rods for concrete prestressing is being done easily and quickly with Simplex hydraulic "center-hole" pullers, a number of construction men report. Because the unit is actually made up of two parts, a remotely controlled ram and a pump, the puller is more easily handled than conventional hydraulic jacks, they explain. The pump unit can be located nearby where it is most convenient for the operator. Many users install a pressure gauge, available as an accessory, between the pump and the puller to check the amount of prestressing applied. This Simplex Re-Mo-Trol puller is also useful on construction jobs as a powerful jack for lifting equipment and building sections, for aligning heavy beams, etc., and for testing the load bearing ability of the soil. Available in 7 models with capacities from 10 to 100 tons, it works in tight spots and enables workmen to stay at a safe distance while lifting, pulling or pushing.

Made by the world's largest manufacturer of industrial jacks, the Re-Mo-Trol is only one of many Simplex jacks that are useful in the construction industry. Others include the famous Jenny self-contained "center-hole" puller, the No. 310A Emergency Jack which lifts 15 tons on the cap, on the toe, on a cap shoe or at intermediate heights with a chain sling, and standard hydraulic, screw and ratchet lowering jacks. They are all described in General Catalog No. 53. Write for a free copy.

TEMPLETON, KENLY & CO.
2509 Gardner Road • Broadview, Illinois



THE SIMPLEX RE-MO-TROL for prestressing concrete is basically a powerful pump connected to a remotely controlled "center-hole" hydraulic ram by a high pressure hose.

you play it **SAFE** with **Safety-Pulls**

Just as important as the time- and labor-saving advantages of Coffing Safety-Pull Ratchet Lever Hoists is the way each one protects your men from injury . . . your equipment from damage. Here's why:

Load cannot slip even if handle is accidentally released — because of dual Ratchet and Pawl principle, developed by Coffing and an outstanding Coffing advantage for over a quarter of a century.

Load is held positively at all times — there is no friction brake to slip or freeze.

Hooks will not break or straighten out.

"Safety-valve" handle will bend before any other part of hoist gives way.

Safety-Pulls are single-chain tested at 100 percent above warranted, rated capacity.

Find out more about how Coffing Safety-Pulls provide extra protection on the job. Write for Bulletin D5SP.

Coffing Safety Pull Ratchet Lever Hoists
2 coil chain models, ¼ and 1½ tons
10 roller chain models, ¼ to 15 tons

Quik-Lift Electric Hoists
Hoist-Alls • Mighty-Midget Pullers
Spur-Geared Hoists
Differential Chain Hoists
I-Beam Trolleys
Load Binders

COFFING HOIST COMPANY
ORIGINATORS OF RATCHET LEVER HOISTS
DANVILLE, ILLINOIS

WISCONSIN-POWERED LITTLEFORD TRAIL-O-ROLLERS

Put on the Pressure!

These road rollers, built by Littleford Bros., Inc., Cincinnati, are easily towed behind jeep or truck, traveling on demountable pneumatic-tired wheels. Hydraulic power lifts rubber-tired trailer wheels, drops rollers into position — handled by one man, in 5 minutes. Compaction variable from 75 to 160 lbs.

Each unit is powered by a model TF 2-cylinder Wisconsin Heavy-Duty Air-Cooled Engine. Features include tapered roller bearings at both ends of the crankshaft, fool-proof AIR-COOLING plus an easily-serviced, OUTSIDE magneto with impulse coupling for fast all-weather starts.

Write for 64-page catalog covering complete line of Wisconsin 4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder models, 3 to 36 hp. Specify "WISCONSIN Power" for your equipment.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

covered among other things financial juggling and mismanagement of welfare funds of the local. The state insurance department went further and found a number of funds in sound financial condition with independent audits periodically and others in which funds were diverted to other than intended uses such as excessive salaries, expense allowances and excessive legal and accounting charges.

Bear in mind that contractors, appointed as trustees of these funds, have responsibility in making sure that they are properly administered and on a sound financial basis. Many trustees of funds in New York have engaged banks or expert insurance actuaries to act as administrators which move has proved very successful in carrying out the intent of the fund.

Personalities on the Move

Joe Keenan, long influential in top building trades policy-making, steps out as secretary-treasurer of the Building Trades Department, AFL, to accept the position of international secretary of his own union, the International Brotherhood of Electrical Workers. He succeeds J. Scott Milne who became president upon the resignation of Dan Tracy who was elected president emeritus. Long a strong advocate of eliminating jurisdictional strikes, Keenan may succeed in bringing the IBEW back to membership on the National Joint Board for the Settlement of Jurisdictional Disputes.

Arthur Larson, 43, has been appointed Under Secretary of Labor, filling the post vacated last fall by Lloyd K. Mashburn. Larson was dean of the University of Pittsburgh Law School and served during the war in the Office of Price Administration and Foreign Economic Administration.

Send Us Your Questions

• Lee Kromer, who writes these columns, is anxious to be as helpful as possible. Why not send him your particular labor problem? Or ask him to interpret a baffling regulation. Send your letter to Lee in care of *Construction Methods and Equipment*, 330 West 42nd St., New York 36, N. Y.

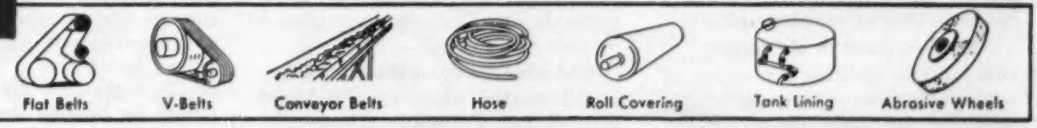
for every use . . . in every industry . . . more use per dollar

R/M HOSE Raybestos-Manhattan makes Homoflex hose as flexible as a rope for handling air, water and for other uses. Workmen like it because it's light, easy to handle—yet strong. At the other extreme, R/M makes the world's largest and sturdiest hose for suction and dredging . . . and the world's safest hose for oil drilling, ship loading and other high pressure services. For every use, from ¼" paint spray to hose large enough for a man to crawl through, R/M's engineering and production are geared to give you "more use per dollar" from every length you buy.

You get more use per dollar too, in R/M transmission, conveyor and V-belts and other industrial rubber products. Consult an R/M representative.

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.



Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
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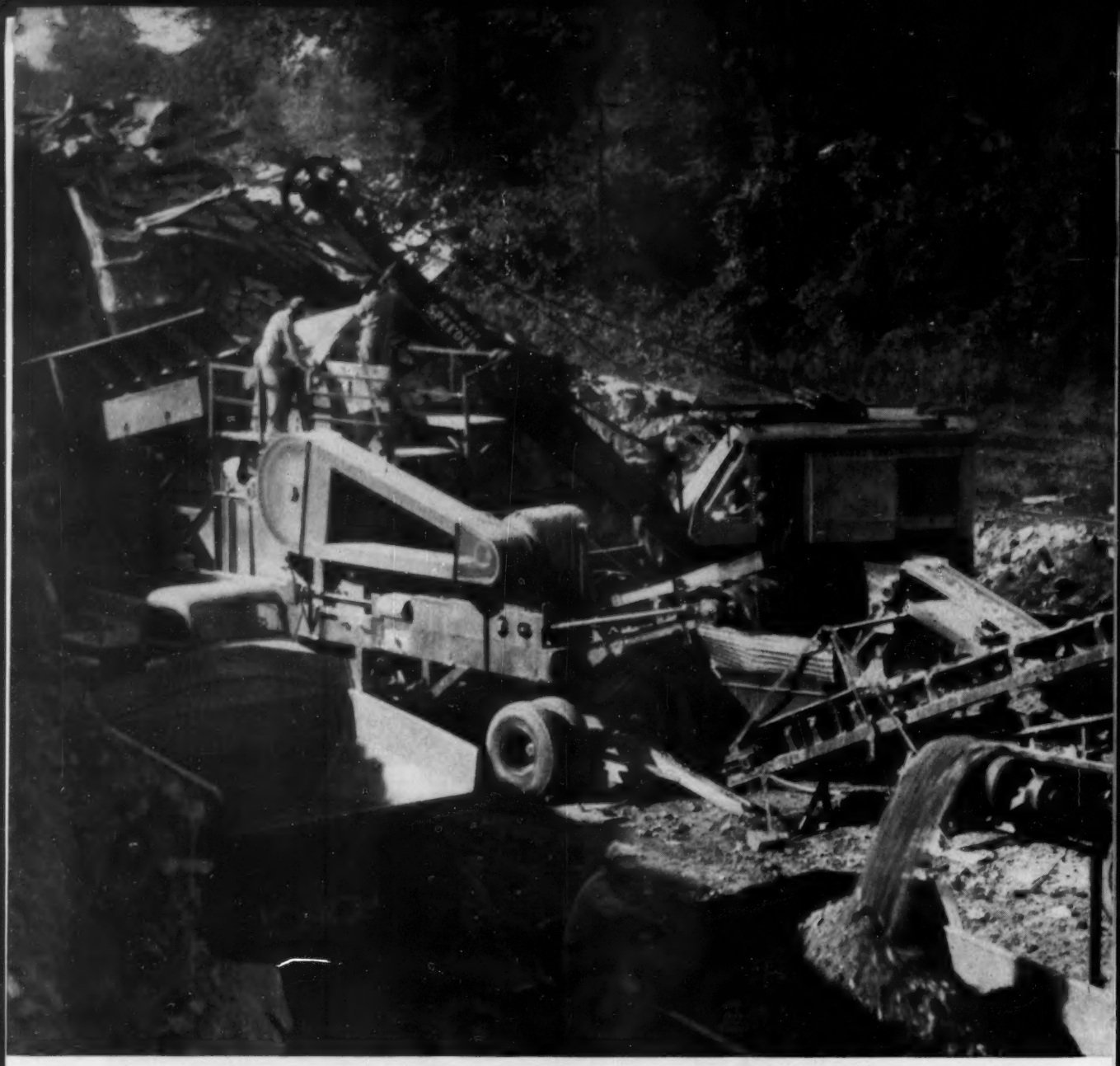
RM-413



Portable plant proves best for Turnpike job

HIGHLAND AGGREGATES MOVES PLANT ALONG 100-YEAR-OLD WASTE PILES TO PRODUCE BASE COURSE

Turnpike . . . TURNPIKE . . . TURNPIKE. In some areas that's about all you hear discussed among construction men these days and it's a good thing too, because goodness knows, our whole highway system has been lagging long enough.

Modern plant in old quarry

One of the exciting examples of modern highway construction is the Ohio Turnpike, and up near South Amherst, in Ohio, you'll find an interesting operation in progress. There, at an old, old quarry, you'll find a modern, up-to-date crushing plant producing base material from 100-year-old refuse piles of cut stone waste.

Now processing base material isn't exactly news in itself. But construction men *are* interested in why a portable Two-Unit plant was placed on this job.

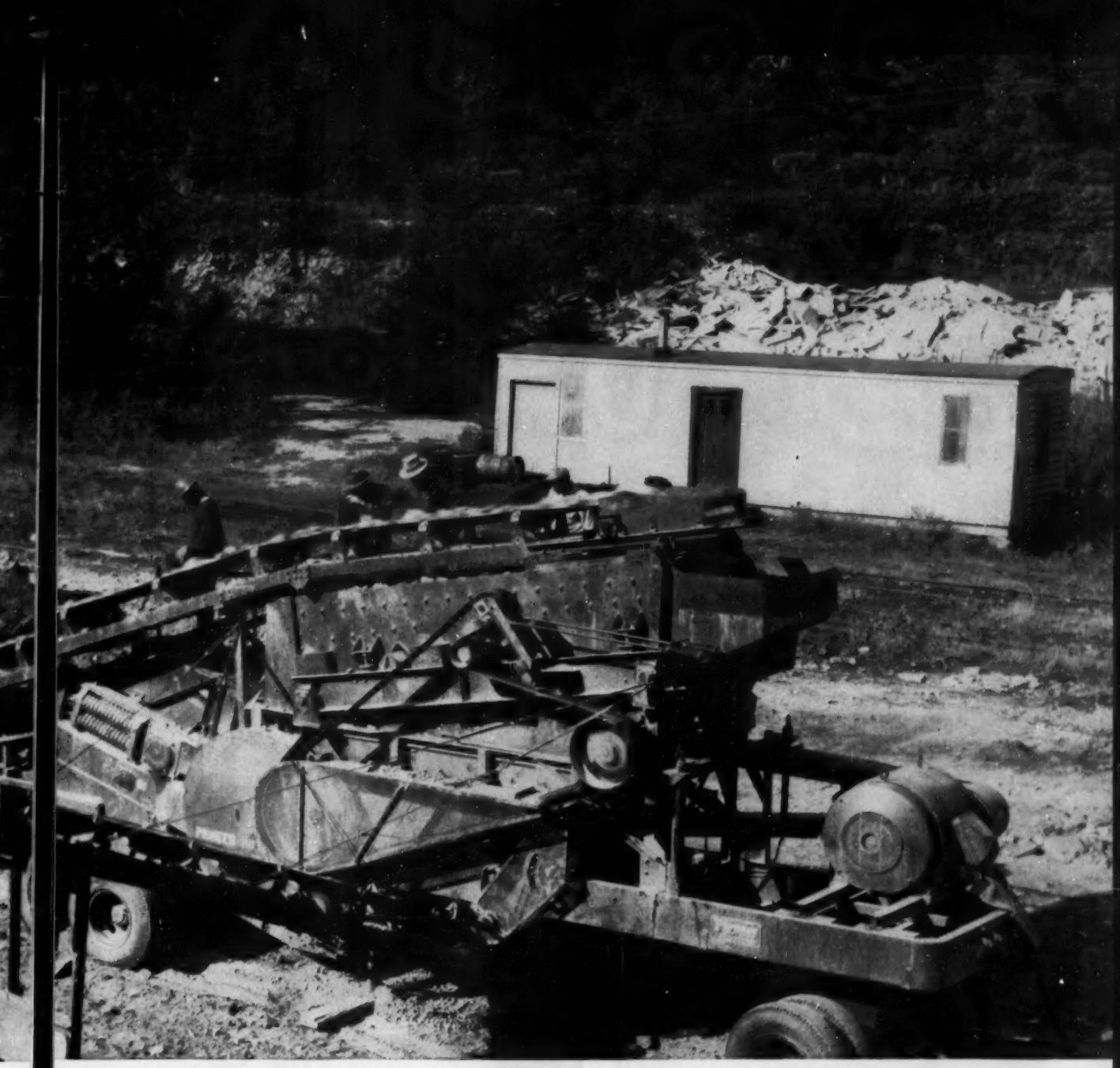
Old piles hold usable material

It all started when the Highland Aggregates Company discovered that these huge piles of waste rock, owned by Cleveland Quarries, were suitable for use on the Turnpike. But this rock, having been dumped in a long row by railroad cars, posed a problem as to selection of the right kind of crushing plant.

J.W. Gutermuth and A.J. Hoffman, executives of Highland Aggregates Company, referred the problem to their equipment distributor, the Williams Tractor Company, who in turn, called in a PIONEER expert. A survey of the material and site showed two alternatives: (1) a stationary set-up, using trucks for all hauling or (2) a portable rig, to eliminate trucks for hauling the feed.

A "natural" for a portable plant

The economics involved showed that this was a "natural" for a Two-Unit portable plant, even to placing the



step-down transformers for the electric power in a portable house. Thus it remained only to determine from the size of feed, the gradation of the product, and the output desired—the proper size of plant.

In the PIONEER plant selected, the primary consists of a 3042 jaw crusher and a 42″ x 14′ apron feeder. The secondary includes a 54″ x 24″ twin roll crusher and a split feed type 4′ x 12′ 3½ deck vibrating screen.

Split feed yields extra output

Normally, in an installation of this kind, one might expect to find a bottleneck in screening capacity. However, in the split feed screen, found only in PIONEER plants, decks are so arranged that half the product from the crushers is fed to the top deck and half to the bottom deck. Oversize from both decks feeds to the twin roll for secondary reduction. Material passing top and bottom decks is collected in the hopper under the screen for delivery to trucks.

Offers twice normal screening area

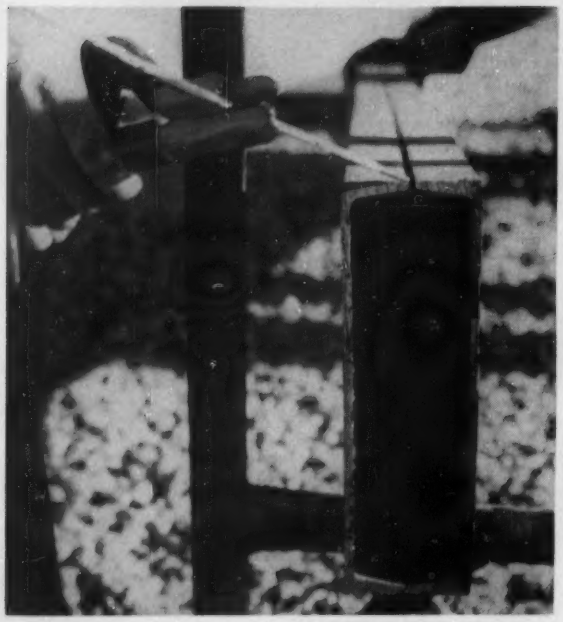
This arrangement of the screens actually provides *twice* the normal screening area of a 4′ x 12′ screen, or 96 square feet—and makes possible a production figure in this case as high as 400 tons an hour, and an easy average of 300 tons.

PIONEER Two-Unit Plants for both rock and gravel combine the advantage of large units with that of easy portability, and provide a flexibility in operation which is not possible in any other type plant. For example, the secondary can be used separately from the primary to permit crushing from surge piles, or each plant can be used independently on a different job.

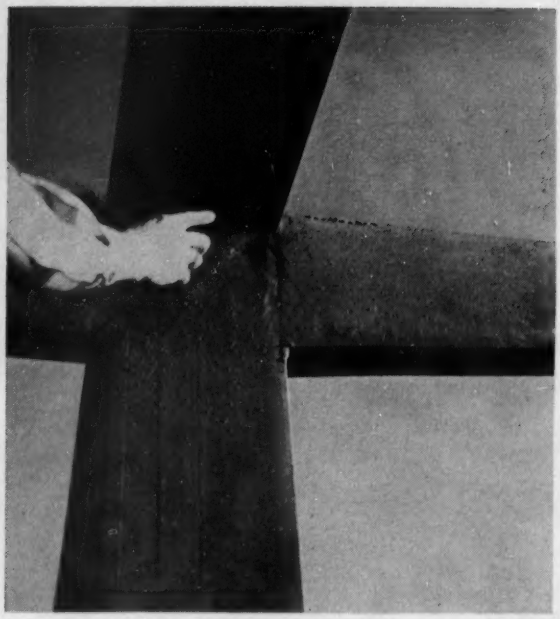
Available, too, is the exclusive PIONEER triple roll secondary, which allows the feeding of larger rock to the rolls. This increases production because the jaw crusher in the primary can be operated at a larger setting.

For full particulars on the application of the Two-Unit Plant to your operations, write to Pioneer Engineering Works, Inc., Minneapolis 13, Minnesota (subsidiary of Poor & Company, Chicago) or see your nearest authorized PIONEER Distributor.

Pioneer
Continuflo EQUIPMENT



PRESTRESSED JR. CHANNEL RIGID BENT METHOD is simple. Box-shaped girders result from welding two 10-in., 6½-lb channels.



COLUMNS WERE MITERED to beams, and overhang beams were butted on. Studs welded to top of beam anchors spacers by bolting.

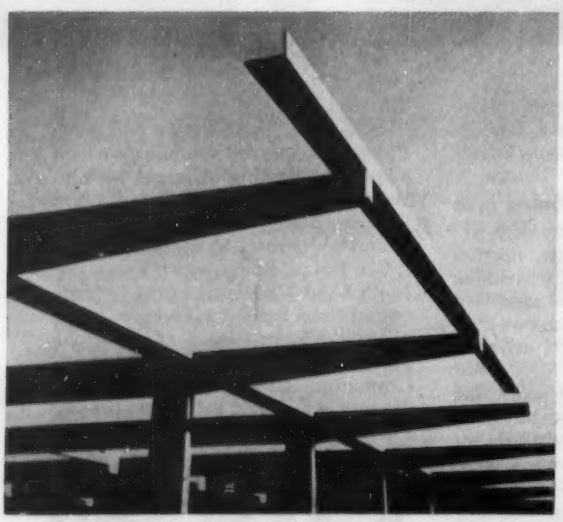
Box-Shaped Girders Make Rigid Bents

THANKS TO AN IDEA of a Greenville, S. C., architect, W. E. Freeman, Jr., the old stair-stringer standby method of construction of engineers, architects and steel fabricators is more versatile than ever.

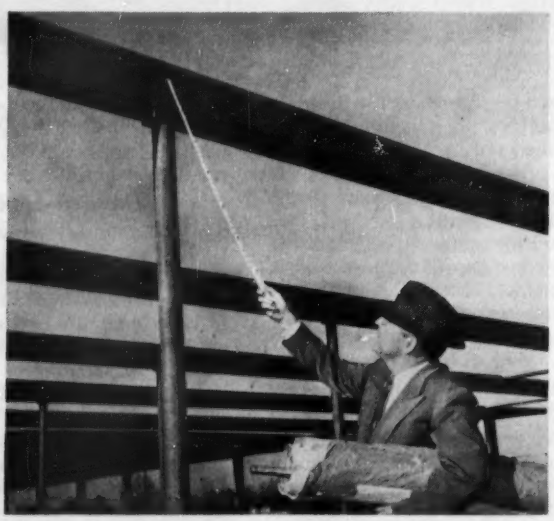
On a recent designing job for a Negro high school in Spartanburg, he had the idea of using box-shaped girders formed by welding together two sections of 10-in., 6½-lb Jones and Laughlin hot-rolled channel. He carried through on his idea and a new structural steel girder, called Pre-stressed Jr. Channel Rigid Bents, bids fair to provide strong framework with a minimum of weight, erection time, and expense.

The 30 bents necessary for the first section of the main building at the construction project were

(Continued on page 163)

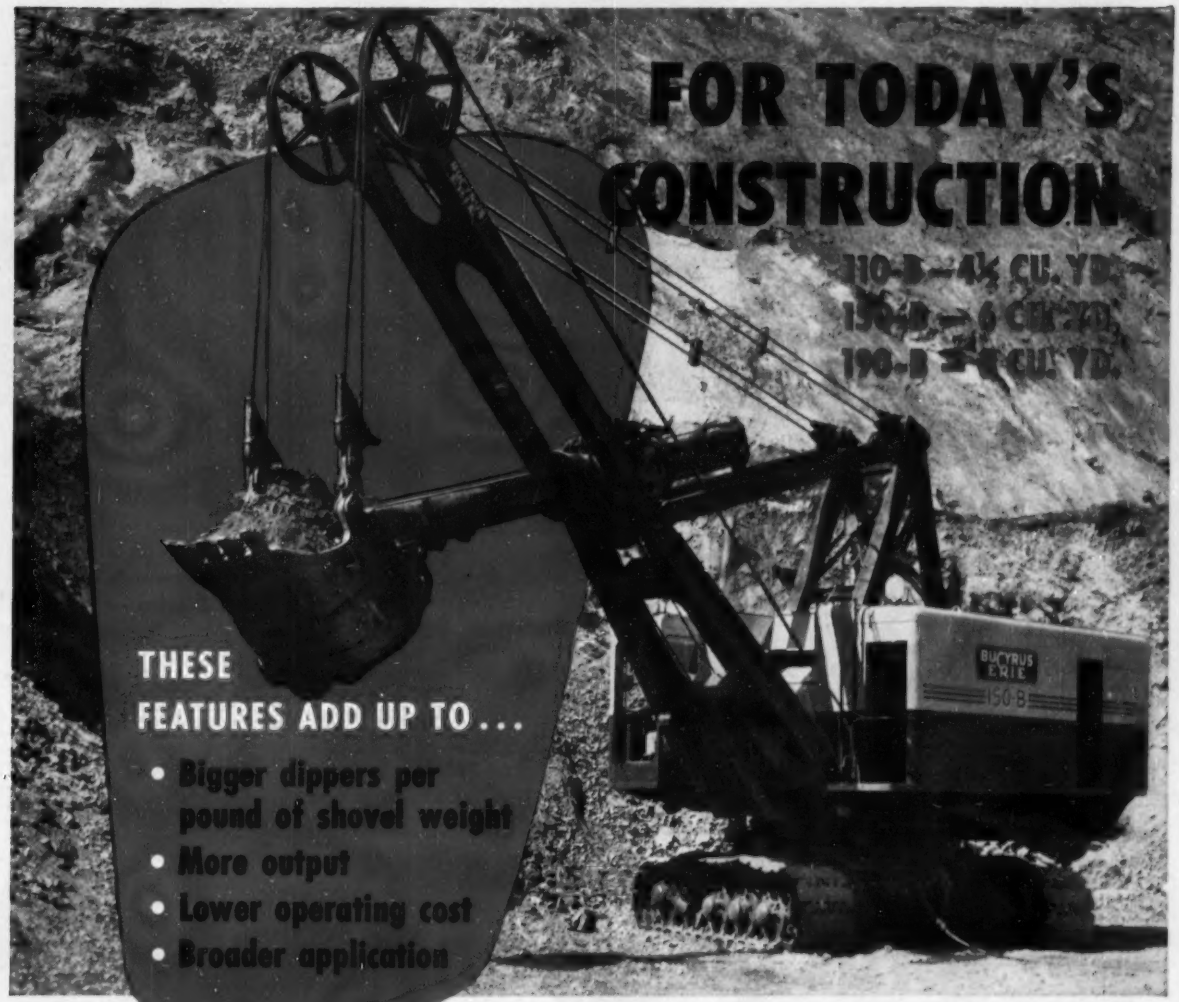


SIX-FOOT, TAPERED OVERHANG BEAMS were connected by angle iron which served both as form for pouring roof and as facing.



FIELD SUPERVISOR Coleman Smith indicates center weld joining the two bent sections. Weld was made before erection.

Tomorrow's Shovels



Bucyrus-Erie's progressive design brings the modern shovel front end to the construction industry.

Only Bucyrus-Erie offers these features in front end equipment on heavy-duty shovels.

BOOM — Two section — light upper section, rugged lower section. No excess weight. Weight and strength concentrated where needed and close to center of rotation.

Lower boom section part of main machine, through twin strut connections to A-frame. Boom feet wide spread — no sway braces or cables. No boom jacking.

TYPE OF HOIST — Twin dual, single-part ropes, one attached to each side of dipper. Power automatically concentrated where needed on dipper lip to break through bank obstructions. No dipper bail.

SADDLE BLOCK — Cylindrical. Rubber cushioned against impact during fast plugging of swing. No binding with flexed dipper handles.

HANDLE — Single, tubular, one-piece, can rotate in saddle block. No handle twist possible.

CROWD MACHINERY — Located on revolving frame, close to center of rotation. Position reduces swing inertia. Accessible, protected.

TYPE OF CROWD — Quiet, positive, independent twin rope crowd and retract. Adapts itself to tubular handle rotation — low friction — less crowd power required.

CONVERTIBILITY — Shovels fully convertible to draglines of the independent motor type — no operating clutches or brakes.

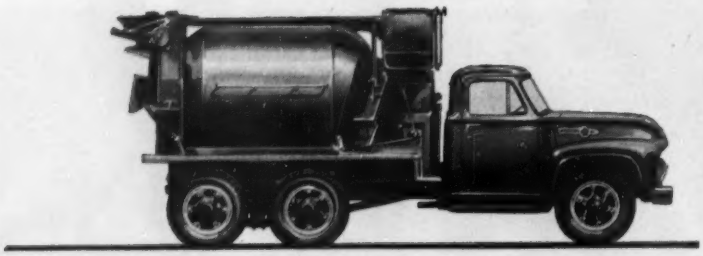
There are many more reasons why these modern Bucyrus-Eries with Ward Leonard Variable Voltage control are the finest heavy-duty excavators ever built. Get the full story today.

8L53C

BUCYRUS ERIE

South Milwaukee
Wisconsin

ANOTHER WAY YOU SAVE WITH FORD *TRIPLE ECONOMY*

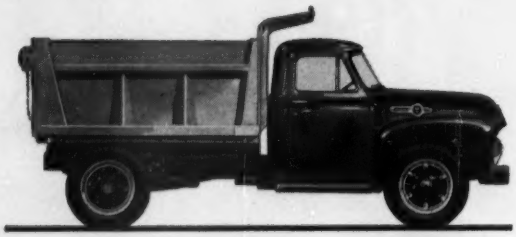


2 New Tandem Axle Big Jobs . . . up to 3800 lbs. more payload than other make 6-wheelers

Brand new Ford factory-built T-700 and T-800 six-wheelers rated for 27,000 lbs. and 40,000 lbs. GVW, up to 60,000 lbs. GCW. Powered by Low-Friction V-8's—138-h.p. *Power King* and 152-h.p. *Cargo King* (T-700), 170-h.p. *Cargo King* (T-800).

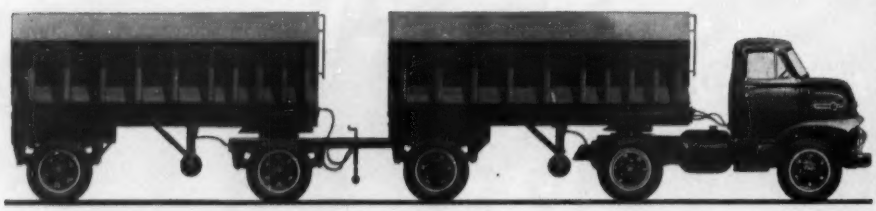
4 New Conventional Models . . . up to 27,000 lbs. GVW —55,000 lbs. GCW

New Ford Series F-700, F-750, F-800, F-900 offer body and payload capacities up to 20,117 lbs. Three new Low-Friction V-8's give you gas-saving power, from 138- to 170-h.p., concentrated in 256 to 317 cubic inches displacement.



4 New Cab Forwards . . . up to 2500 lbs. more payload

Ford's giant new Cab Forwards, C-700, C-750, C-800, C-900, haul 35-ft. trailers within the legal limit in all states. Rated up to 27,000 lbs. GVW, up to 55,000 lbs. GCW. C-900 handles up to 2500 lbs. more payload than other make cab forwards with 55,000 lbs. GCW.



'54 Fords go big on BIG JOBS!

Ten series in Ford's expanded line of new extra heavy duty trucks. New V-8 power up to 170-h.p.! New Master-Guide Power Steering! New money-saving capacities give you another way to save with Ford Triple Economy.

Now there's a Ford Truck to handle your toughest, heaviest hauling and do it with economy that's new to the extra-heavy-duty field.

New Low-Friction, Overhead-Valve V-8's deliver as much as 44% more power per cubic inch than other truck engines in their class. The fewer cubic inches an engine has, the less gas it usually needs. New Short-Stroke design cuts friction, increases engine life.

New *Master-Guide* Power Steering is standard on T-Series with *Cargo King* engines, optional at worthwhile extra cost on F-Series with *Cargo King* engines. It cuts steering effort up to 75%! Ford's new 3-man *Driverized* Cabs and controls provide comfort and driving ease to help the driver do a better job, faster and with less effort.

For new slants on heavy duty truck economy, call your Ford Dealer *today*, or write: Ford Division, Ford Motor Co., Dept. T-9, Box 658, Dearborn, Mich.

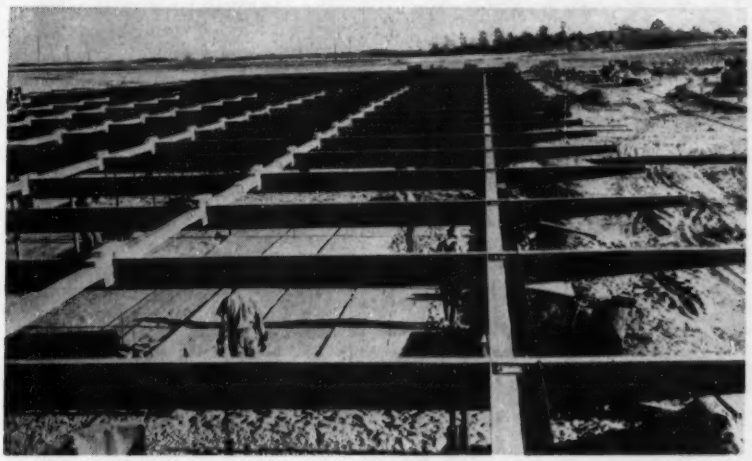
SAVE WITH *ALL THREE!*

1. New Gas-Saving Power
2. New Driver-Saving Ease
3. New Money-Saving Capacities

FORD *TRIPLE ECONOMY* TRUCKS

MORE TRUCK FOR YOUR MONEY!

BOX-SHAPED GIRDERS . . . Continued from page 160



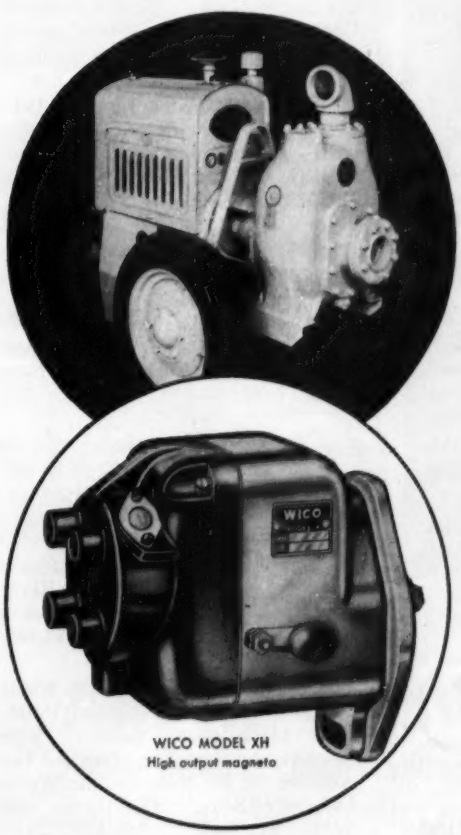
OUTSIDE SPACERS between bents were formed from channel bolted to studs which were welded to the bents themselves. Little adjustment was necessary because of rigidity.

formed in two sections and field-connected by welding on the ground before erection. Columns were mitered to the 72-ft beams and the 6-ft tapered overhang beams were butted on. Interior pipe columns were welded into place. The secret of the method's success was the prestressing. Each column was spread ¾ in. at the bottom as it was welded to the beam. When each beam was hoisted for erection by two cables, the bent's own weight brought the outside columns back to perpendicular, fitting anchor bolts exactly, and at the same time a camber of ⅝ in. per 30-ft span was obtained by resulting tension. This camber will be offset by the weight of the roof.

The roof will be formed of bulb-tees and insulated board over which will be applied gypsum and asphalt.

R. I. Brown, superintendent of Claussen & Webster Construction Co., of Augusta, in charge of the project, says that economy of note was achieved by the rigid bent method, in addition to speed of erection. The 30 bents in the first section of the main structure went up in only 21 working hours. The cost for field connections, erecting and plumbing the first 30 bents was $29 per ton. This cost is expected to drop, as more experience is gained in working with the new method.

Another cost-cutter on this type of erection has been noted in the bents which can be left exposed in the interior with only painting necessary. The bottom weld of the beam is ground flush, as is the inside weld on the columns.



WICO MODEL XH
High output magneto

For power when you need it— choose WICO MAGNETOS

Construction equipment has to work any time, in any weather—and that's tough service for ignition systems. That's why leading manufacturers put Wico Magnetos on many of their engine-driven units. The CMC Centrifugal pump shown at left, for example, is powered by a Hercules IXB engine equipped with a Wico Magneto.

The Wico XH Model, widely used on construction equipment, is heavy-duty in every way. Features like its weather-proof plastic-jacketed coil, one-piece cast rotor, hefty tungsten contacts and pre-lubricated bearings add up to real ruggedness that withstands any field conditions.

For ignition that delivers power whenever you need it, look for Wicos on your new engines. And always replace with a Wico when you do an overhaul.

Your nearby Wico Station will give you prompt service. For full details, write to us today.

WICO ELECTRIC CO.
West Springfield Massachusetts

WICO

Three Hundred and Fifty Days

in a Man-Made Dust Storm

We create this dust storm in a sealed chamber. Within it, Brunson instruments are bombarded by fine pumice dust borne by a constant gale of wind. The instruments are rotated continuously during the test.

Even after 'round-the-clock exposure to such extreme conditions for eleven and a half months, the accuracy and operability of Brunson instruments is unimpaired.

What better proof can there be that Brunson dustproof, ball bearing construction offers the answer to your three big headaches with surveying instruments—binding caused by dirt, inaccuracy caused by wear between moving parts, and costly maintenance to overcome the effects of dirt and wear?

In Brunson instruments, dirt is sealed out, the lubricant sealed in, and wear is practically eliminated by the smooth ball bearing action in the spindle and telescope axis. They maintain lasting accuracy—without costly routine repair . . . loss of time on the job through malfunctioning . . . or adjustment to compensate for errors.

They cost no more—offer *lots* more. Write today. You'll be glad you did!

BRUNSON

The New Standard of Excellence

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BRUNING

Everything for the Engineer and Draftsman

CHARLES BRUNING COMPANY, INC. • 4700 MONTROSE AVENUE • CHICAGO 41, ILLINOIS

SOME BIG CONTRACT AWARDS OF THE MONTH

Continued from page 26

wealth of Massachusetts, Department of Public Works, 100 Nashua St., Boston, Mass. $4,449,538.

H. B. Zachry Co., Construction Div., Box 2570, San Antonio, Tex. Laying 208 mi 20-in. welded joint crude oil pipe line Corsicana to Beaumont, Tex. for Magnolia Pipe Line Co., Magnolia Bldg., Dallas, Tex. $3,744,000.

C. J. Maney Co., Inc., 173 Bedford St., Lexington, Mass. Lynnway highway, General Edwards Bridge-Lynn Shore Drive between Lynn and Nahant, $2,174,920.

A. Teichert & Son, Inc., and **M. J. Bevanda,** Box 397, Baldwin Park, Calif. West embankment outlet works and relocation of Lincoln Ave., El Monte, Los Angeles Co., Calif., for U. S. Engineers, 751 Figueroa St., Los Angeles, $3,087,946.

E. & F. Construction Co., 94 Wells St., Bridgeport, Conn. Helicopter plant, Stratford, Conn., for Sikorsky Aircraft Div., United Aircraft Corp., South Ave., Bridgeport, Conn., $17,500,000.

H. W. Miller Construction Co., 1511 Neave St., Covington, Ky. Mill Creek sewage disposal plant on Gest St., for the city of Cincinnati, City Hall, Cincinnati. $5,541,182.

Lummus Co., 385 Madison Ave., New York 17. Design and construct manufacturing plant to make high pressure acetylene derivatives, Calvert City, Ky. for General Aniline & Film Corp., 230 Park Ave., New York 17. $6,000,000.

American Bridge Division, U. S. Steel Corporation, 525 William Penn Place, Pittsburgh, Pa. Contract No. 5, cables and suspender ropes for Delaware River Bridge between Philadelphia and Gloucester City, N. J. for Delaware River Port Authority, Administration Bldg., Camden, N. J. $4,768,293.

Vinnell Company, Inc., 1145 Westminster Ave., Alhambra, Calif., steel plate pump delivery pipe lines at five pumping plants at Los Angeles for the Metropolitan Water District of Southern California, 306 W. 3rd St., Los Angeles. $2,632,710.

Like all Austin-Western Power Graders, the new Super "88" has tremendous climbing power in its front drivers.

Why AUSTIN-WESTERN power graders give you

More for Your Money

Getting down to cases, the main job for any self-propelled grader is to move a satisfactory amount of material with the blade, and keep traveling in the desired direction. *Traction* and *directional control* ... these are the fundamental problems of the designer. They are completely solved in Austin-Western Power Graders by exclusive all-wheel drive and all-wheel steer. They can never be completely solved in an ordinary front steer, rear drive grader.

All-Wheel Drive and All-Wheel Steer work as a team, each making the other doubly effective. All-Wheel Drive provides 30 per cent more Power-at-the-Blade. All-Wheel Steer provides all around maneuverability and extreme blade reach not approached by ordinary motor graders; *plus* Controlled Traction for moving more material farther and faster.

Ditch cuts around sharp corners—impossible with any other grader—are easy for the Austin-Western operator.

Shoulders as wide as 10 feet are finished without leaving tire marks.

Controlled Traction puts the grader in position to move a big windrow up the slope.

With power and directional control at both ends of the machine, riding banks is much quicker and easier with an Austin-Western.

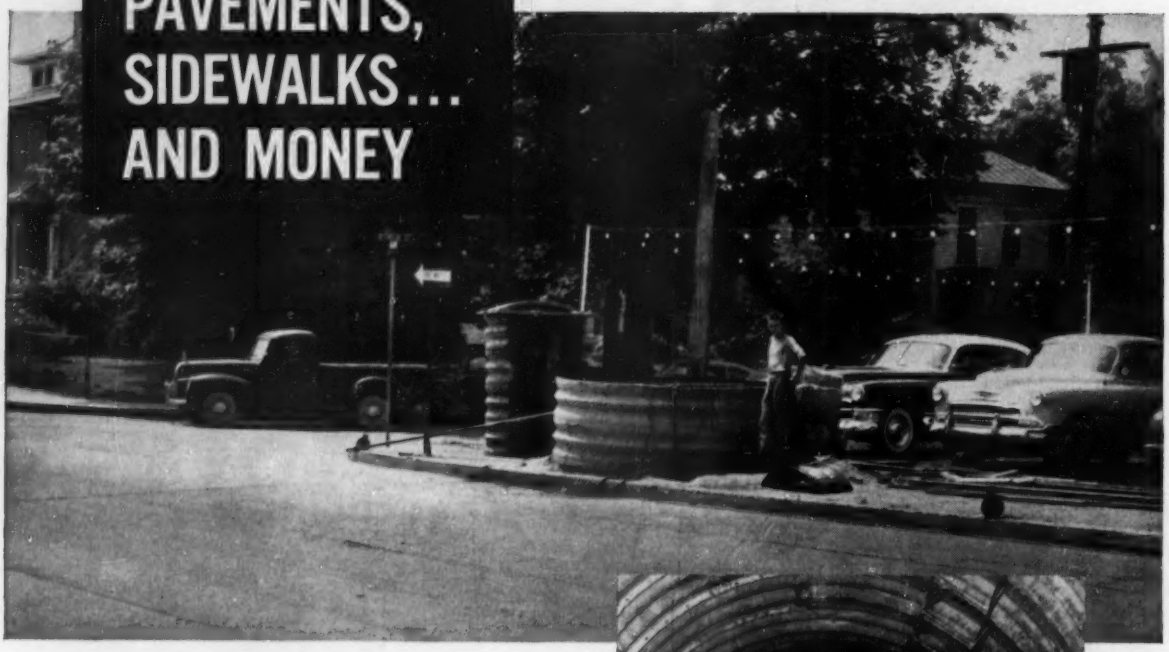
Austin-Western

Power Graders • Motor Sweepers
Road Rollers • Hydraulic Cranes

BALDWIN BLH LIMA-HAMILTON
Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

TUNNEL SAVED PAVEMENTS, SIDEWALKS... AND MONEY



Inconspicuous shaft eliminates traffic congestion and torn-up pavement.

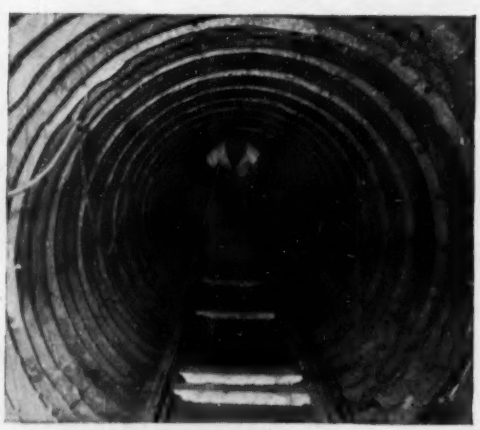
Cooperating in the regional clean-up of the Ohio River, the city of Charleston, West Virginia, cuts costs on a big intercepter sewer project by tunneling the job with Armco Liner Plates.

One problem was to install intercepter sewers about 25 feet deep under two heavily traveled streets. Open cutting would not only have torn up sidewalks and pavements but also disrupted traffic and business. So for reasons of economy and convenience it was decided to tunnel the job with Armco Liner Plates.

Tunnels were driven in both directions from shafts sunk every 400 feet. Almost 4,000 feet of 12-gage, 48-inch diameter Armco Liner Plate was used. When the tunnel was completed the liner plate used in the shafts was salvaged for re-use.

Armco Liner Plates simplify installation of tunnels, shafts, and caissons. They are also ideal for lining existing failing structures. Unskilled crews do the work easily, unhampered by bad weather. And corrugated metal design provides ample strength without excess weight or bulk. Only simple tools are needed. Labor costs are low. Wide size and gage range. Write for details. Armco Drainage & Metal Products, Inc., 3294 Curtis Street, Middletown, Ohio. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Looking down Armco Liner Plate shaft to mouth of tunnel.



Dump cart on rails hauls out dirt as tunnel progresses.

ARMCO LINER PLATES ARMCO

FROM A READER...

Individuals Have Varied Skills ...

TO THE EDITOR:

My hat goes off to you . . . Having been in construction for 15 yr in private and 25 yr in government work, I have been able to practice your proposal appearing in the August and September, 1953, issues of CONSTRUCTION METHODS AND EQUIPMENT entitled "One United Construction Union," in regard to workmen training in government service where union organization or union wage scale are not adhered to, having a wage scale set by civil service . . . I was able to instigate special training, where it was found that some individuals had special or varied skills or inclinations. Out of every three painters one could use a spray gun, do free-hand lettering, or refinish a house or office furniture. Out of every four bricklayers one could do plaster work and ceramic tile work. Carpenters became furniture or cabinet makers. Steamfitters, welding and plumbing were combined . . . This gives us a very flexible organization with no slack or rush time in any one shop nor being handicapped due to illness of any one mechanic, and financial remuneration to those able to perform more than one trade . . . If the workers were given special training under direction of the unions and contractors . . . in the near future the unions would unite . . . by demand of the workers.—**Peter Warmenhoven, DA Civilian R&U Branch, Nurnberg District Engineer, Germany**

Contractor Rewards Sidewalk Super

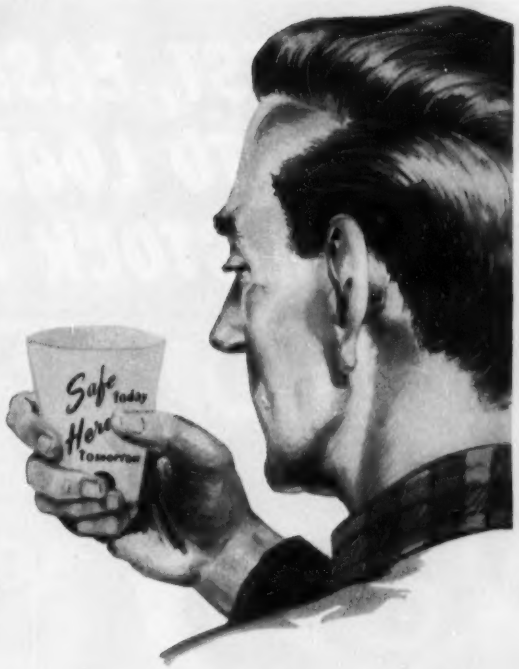
RECOGNITION OF its sidewalk superintendents as a necessary help in the successful completion of the job has been made by the Fisher Contracting Co., of Phoenix, Ariz.

First honored was a retired Phoenix physician, Dr. J. A. McIntyre who babied Fisher's $2.7 million domestic water pipeline from start to finish.

Upon completion of the line, the company and city officials paid tribute to the Doc, and he was presented with a hand-painted tie bearing the firm's Kingfisher emblem and inscribed "honorary job superintendent."

George Bell, pipeline superintendent, made the award.

Portrait of a man helping to reduce your insurance costs!



Sure! — he's getting a drink of water (from a crisp, clean AJAX Cup). But he's also *reading* the safety message imprinted on the cup.

And safety messages *that get read* do help reduce accidents. The National Safety Council confirms that. And you know how accidents affect your insurance rates. Fewer accidents, lower costs. So . . .

Use AJAX Cups to put your safety messages in your worker's hand — where he'll see them several times a day, when he's relaxed, receptive, ready to read. (And he'll appreciate the comfort, convenience and complete sanitation of these crisp, clean, easy-to-drink-from AJAX Cups, too.)

AJAX® Cups and AJAX Drinking Water Tanks deliver fresh cool water to workers — mean less time lost on the job. AJAX Cups and dispensers are also ideal for stationary tanks, barrels, pipeline faucets. 4 oz., 6 oz and 7 oz. sizes packed imprinted with assorted stock safety messages — or your own message to order.

GET THE FULL STORY—Write us today for this new folder which gives full details on imprinted AJAX Cups and equipment.

A TYPICAL EXAMPLE

(Actual case history from insurance company files)

In one year, Contractor B paid insurance premiums of $16,165. The next year his payments totalled only $14,286. Yet his base manual rate for the second year — determined by payroll, type of jobs done, etc. — actually was nearly $2000 *higher* than the first. He saved that, and $1869 more, because an active accident prevention program earned him a substantial credit on his second year premium.

United States Envelope Company

General Offices: • Springfield 2, Mass.

15 DIVISIONS FROM COAST TO COAST

C2-C

FASTEST, EASIEST WAY TO LOAD MATERIAL FROM STOCK PILE INTO TRUCKS

BARBER-GREENE BUCKET LOADERS

No other machine, no other method can equal the speed and efficiency of Barber-Greene Bucket Loaders in loading sand, gravel, and other similar bulk materials from stock piles and storage areas into trucks. At rates up to 3 cubic yards per minute, these loaders dig, lift and convey bulk material in one continuous high capacity flow, virtually eliminating truck waiting and driver waiting time. Simple to operate, easy to understand. The truck driver can operate the loader to load his own truck. Backed by over 1,000,000,000 yards of material handled by Barber-Greene Loaders, they represent the ultimate in low-cost loading efficiency.

A TYPE THAT WILL DO YOUR JOB BEST

MODEL 543

This self-propelled loader is mounted on a tractor-type chassis and pneumatic tires for traveling from job to job at rates up to 15 m.p.h. Equipped with a hydraulic swivel conveyor, it has the reach to load highest trucks, long trucks and trailers, and trim the load to full capacity every time. Capacity—3 cubic yards per minute. Easily converted for loading coal or snow.

Send for catalogs!

Complete and detailed information on the Model 543 and 82A is contained in individual catalogs available at your request. Ask your Barber-Greene Distributor or write directly to the address below.

MODEL 82A

This crawler-mounted, 3 cubic-yard per-minute Bucket Loader has the stability so often necessary in typical truck loading operations—in pits, on soft or rocky ground, etc. Built for heavy, continuous operations, it is economical enough to justify itself in intermittent service. Complete accessories are available, including single and double deck vibrating screens for loading, screening and scalping simultaneously.

Barber-Greene

Aurora, Illinois, U. S. A.

IANCIAL AID TO HIGHER EDUCATION

Our Colleges and Universities Face Grave Financial Problems

For the past decade the nation's colleges and universities have been caught in a destructive financial squeeze. It is particularly destructive for the independent, privately endowed institutions. Unless extraordinary measures are taken to relieve this squeeze, it promises to become progressively worse. To let it do that is to court a national disaster.

This is the first of two editorials devoted to the financial plight of our colleges and universities. This first editorial deals with the character of the problem, present and potential. The second will indicate some things that need to be done about it, and particularly what American business might do.

Enrollment Soars, Income Lags

In broad outline, the financial problem that afflicts our colleges and universities is simple. The demand for their services has increased rapidly, and promises to keep on increasing even more rapidly. At the same time, their financial capacity to provide these services has lagged behind, primarily because of price inflation.

Between 1940 and 1950, college and university enrollment increased from approximately 1⅓ million to 2⅓ million—about 75 per cent. Over the same period, the educational income of these institutions, measured in terms of its actual purchasing power, increased only about 64 per cent. Thus, at the end of the decade, our colleges and universities as a group had, on the average, about 6 per cent less to spend per student than they had at the beginning. Meanwhile, the rapid advance of science and technology had made a good college or university course a much more expensive operation than it was in 1940. Since 1950, the latest date for which comprehensive figures are available, the financial squeeze on our colleges and universities has intensified, largely because of another wave of price inflation touched off by the Korean War.

Among the colleges and universities, the independent, privately endowed institutions are particularly hard pressed. In terms of actual purchasing power, the independent liberal arts colleges are now spending at least 20 per cent less per student than they spent in 1940. Public institutions of higher learning, supported out of tax revenues, have managed to increase slightly their expenditure per student. Otherwise, the financial squeeze on higher education as a whole would be even more severe.

(Continued on next page)

Why Independent Colleges Are Hit Hardest

The principal reason why the independent colleges and universities are so hard up is the shrinkage in their income from endowments. These endowments, created in other days by gifts of generous benefactors to help pay the expenses of higher education, have been hit hard from two directions. During the war and post-war years, the tax collector took so large a part of the incomes and estates of wealthy people that this source of endowments has been greatly reduced. Over the same period price inflation cut in half the purchasing power of the income derived from existing endowments. In 1940 income from endowments provided 26 per cent of the total income of the independent colleges and universities. By 1950 it provided only 14 per cent. The figure is still lower today.

The financial plight of the independent colleges and universities is directly reflected in the salary status of their teaching staffs. In mid-1952 a national survey showed that, after adjustment for the increased cost of living, the salaries of those holding full professorial rank in these institutions were 12 per cent lower than they were in 1941-42. Junior teachers, with the rank of instructor, fared somewhat better. In terms of actual purchasing power, their salaries declined only 2 per cent over the 12-year period, largely because there is more direct competition for their services from industry. Over the same period, the real wages of industrial workers increased 55 per cent.

Time Will Not Provide a Cure

The plight of the colleges and universities, which is shared in some degree by all parts of our educational system, is not one that can be left to time for a cure. On the contrary, the financial problems of our institutions of higher learning will be intensified in the years ahead by the pressure of rapidly increasing enrollments. Present prospects indicate that during the next decade college and university enrollment will increase by about one-third, or from 2⅓ million to over 3 million. The problem of increased enrollments will become particularly acute toward the end of this decade when the babies born during the great surge of population in World War II are ready to enter college.

Such an increase in population as that now in prospect can be a tremendous asset to the nation. It is still a truth, even though it is worn a bit thin by frequent repetition at commencement exercises, that a nation has no resource more valuable than the education of its people. And the better the education, the more valuable the asset.

But to realize this, our colleges and universities must have the financial strength to handle the increased enrollments that face them in the years ahead. This means that we must relieve our independent colleges and universities, in particular, from the financial squeeze in which they are now caught and make them full partners in the economic well-being of the nation. Some of the means by which American business might help achieve this will be discussed in a second editorial.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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Donald C. McGraw

PRESIDENT

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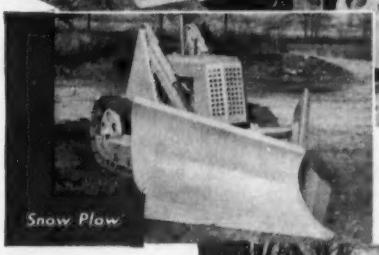
Get them all... in one!

OLIVER "OC-3"

TRACTOR-LOADER



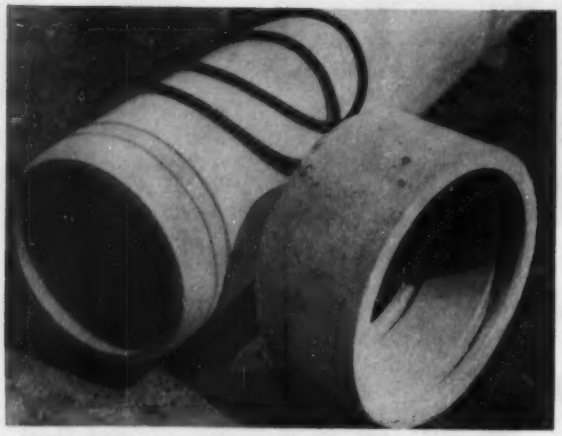
Quick change does it! In minutes, the "OC-3" tractor-loader converts easily to any of the tools shown here. You beat the cost of separate equipment for each job. You operate year-round in any ground condition doing more work... saving time, eliminating delays. The simple controls, all-hydraulic loader and maneuverability of this unit let you work where larger tractors cannot reach. Savings on equipment, hauling costs, (takes only a light trailer or truck) to say nothing of fuel economy, will pay for your "OC-3" tractor-loader in a short while.

Write today for a copy of a new folder on the "OC-3" tractor-loader, or visit your Oliver Industrial Distributor for complete details.

THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Illinois

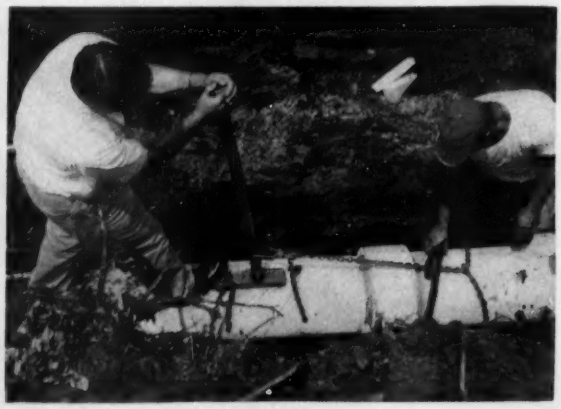
a complete line of industrial wheel and crawler tractors



BETTER JOINT—Johns-Manville claims this new coupling called Ring-Tite, automatically centers, aligns and provides for expansion.

FIRST STEP—The rubber rings are popped into two grooves of the sleeve. The rings and sleeve slide together over pipe.

SECOND STEP—Pipe is lowered into trench ready to be coupled. Ends of pipe are machined to provide an entering taper back.



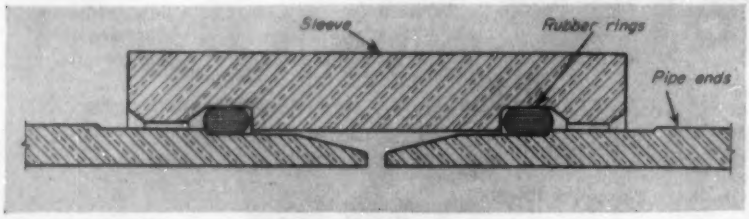
THIRD STEP—A lubricant helps slide elements together and then the pipe is roughly aligned and brought together with a puller.

Better-Type Coupling for Transite Pipe

TRANSITE PRESSURE PIPE is not new . . . it's been around for some 25 yr, but now a new type of coupling called Ring-Tite has been developed by Johns - Manville which cuts down installation time and gives a far better joint than previous couplings.

Like the Simplex coupling used for so many years, the new Ring-Tite coupling consists of a sleeve and two rubber rings, but the sleeve of Transite and the ends of the Transite pipe are of a different design.

The sleeve has two grooves cut circumferentially into the inner wall which locate the rubber rings accurately and firmly hold them in position.

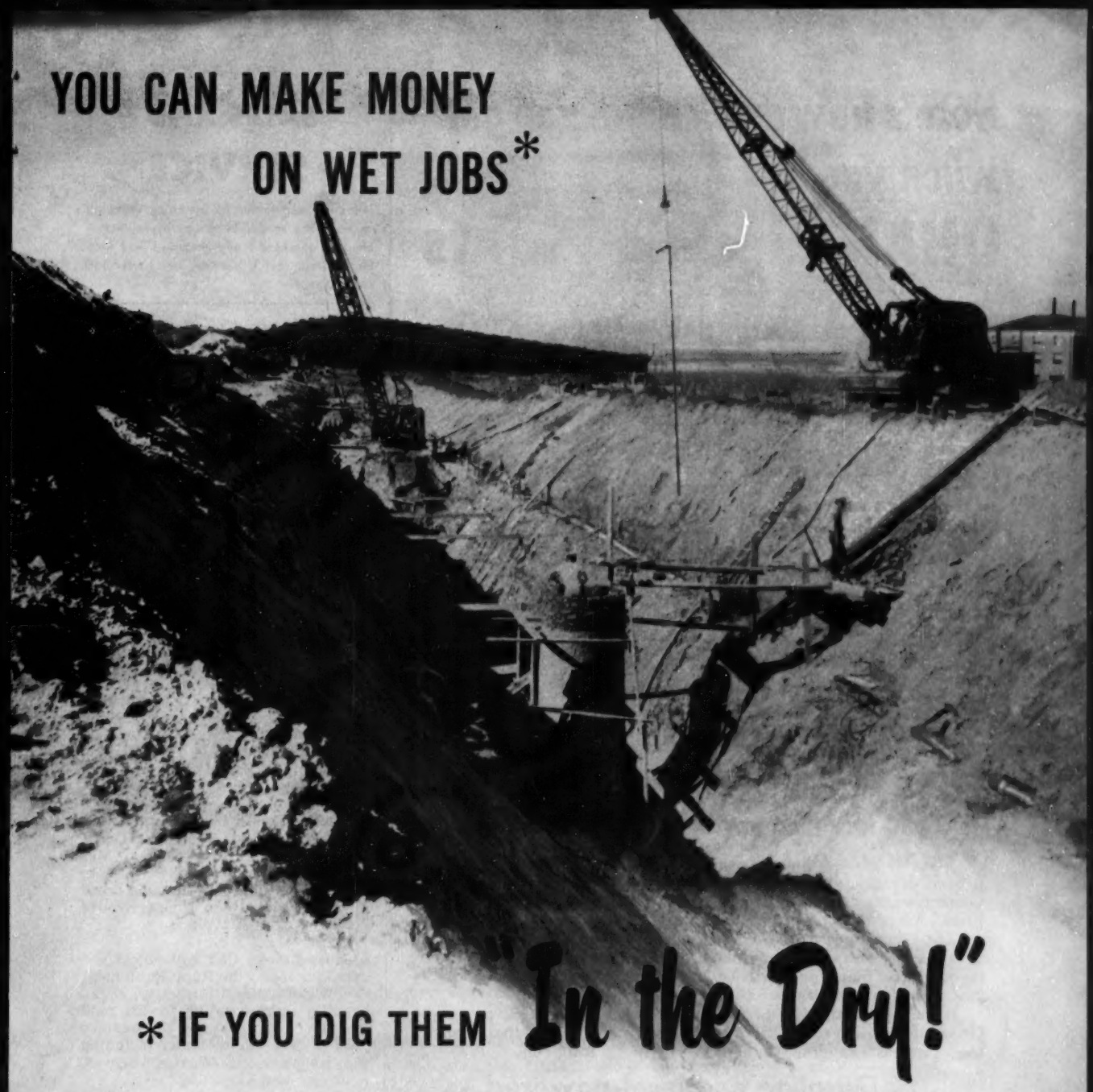


CROSS-SECTION DIAGRAM shows the Transite sleeve, the two rubber rings and the pipe ends which slide together to form the Ring-Tite coupling for the Transite pipe.

To accommodate this sleeve the ends of the asbestos-cement pipe are specially machined to provide an entering taper back which makes it far easier to insert the pipe. A shoulder between the two steps provides a stop which halts movement as the pipe, rubber rings and Transite sleeve slide together.

Actually, there are three steps to making the assembly. First, the rings are popped into the grooves. Next, the pipe ends are covered with a lubricant furnished by Johns-Manville which permits the elements to slide together. Then the pipe is roughly aligned, a puller attached and the job is completed.

One contractor using the new Ring-Tite coupling had planned to lay 400 ft of pipe per day, but the new assembly helped him attain better than 700 ft per day.



YOU CAN MAKE MONEY ON WET JOBS*

* IF YOU DIG THEM "In the Dry!"

A MORETRENCH WELLPOINT SYSTEM kept plenty of water (and the contractor) out of trouble on this deep sewer excavation in the mid-west. With water under control, the job progressed efficiently and economically—in the dry.

For interesting, practical information on how you can handle a wet job profitably, ask for a copy of our new 1954 catalog. Address your request to:

Moretrench Corporation

90 WEST STREET, NEW YORK 6, N. Y.

Here's how much more you get when you buy—
ONAN Electric Plants

HIGHER CAPACITY per pound of weight. A 10KW Onan weighs only half as much as other comparable units.

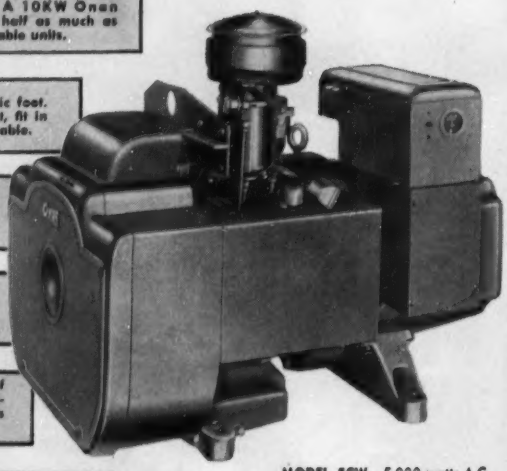
MORE OUTPUT per cubic foot. Onan units are compact, fit in small space, easily movable.

UNIT-BUILT CONSTRUCTION Onan-built plants are direct-connected for permanent alignment, long life.

SPECIAL ELECTRIC PLANT ENGINES. Onan-built engines have massive bearings and other parts to assure durability.

VERSATILITY. A wide variety of accessories such as skids, dollies, trailers, adapt Onan units to more jobs.

48-HOUR SERVICE. Repair parts and factory experts are close to any part of the U.S. Many foreign parts depots.



MODEL 5CW—5,000 watts A.C. two-cylinder, air-cooled, gasoline powered.

. . . yet kilowatt for kilowatt, an ONAN costs you less than any other electric plant!

ONAN gives you many advances in electric plant design, plus proved dependability on the job! You pay no premium for these Onan features . . . in fact all the electric plants shown here are priced lower than other plants of similar capacity.

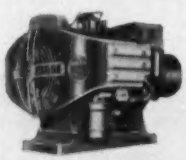
The Onan line is complete, with scores of different sizes and a great variety of optional equipment, making it easy to pick just the right electric plant for particular jobs *with savings in weight, space and operating expense.*

For any job requiring an independent source of electric power, Onan gives you greater all-around service and unequalled value too . . . measured either by first cost or in the long run.

. . . *Gasoline or Diesel-powered Air or water-cooled*

GASOLINE: Air-cooled—400 to 10,000 watts. Water-cooled—10,000 to 50,000 watts.
DIESEL: Air-cooled—3,000 and 5,000 watts. Water-cooled—15,000 to 55,000 watts.

MODEL 305CK—3½KW A.C. 2-cyl. air-cooled, gasoline engine.



MODEL 5DRP—5KW A.C. Diesel two-cylinder air-cooled.

MODEL 3DSP—3KW A.C. Diesel one-cylinder air-cooled.

Write for specifications and descriptive folder!

Onan ELECTRIC PLANTS

D. W. ONAN & SONS INC.

7858 University Avenue S. E., Minneapolis 14, Minnesota

SALES AND ★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Wooldridge Mfg. Co.: American Equipment Corporation, York and Allen Sts., Mechanicsburg, Pa., has been appointed exclusive distributor for Wooldridge earthmoving equipment throughout a major portion of eastern Pennsylvania including Wayne, Pike, Lackawanna, Luzerne, Schuylkill, Lebanon, Lancaster, and all counties west to and including Potter, Clinton, Center, Mifflin, Juniata, and Franklin.

Hensley Equipment Co.: Announces the appointments of the following firms to serve as exclusive distributors in their particular areas—Lowry Equipment Co., Redding, Calif;. Oroville Motor Parts, Oroville, Calif.; Harrison Motor Parts, Fresno, Calif.; John A. Batchelor, Los Angeles, Calif.; Cal.-Ore. Machinery Co., Medford, Ore.; J. T. Holland Co., Salt Lake City, Utah; and Hi-Way Machinery Co., Dallas, Houston and San Antonio, Tex.

Clark Equipment Co.: Has appointed United Tractor and Equipment Corp., New York, N. Y., and Michigan Machinery & Equipment Co., St. Joseph, Mich., as distributors in their areas for the Michigan line of power shovels and tractor shovels.

Cleaver-Brooks Co.: Announces the appointment of the Rupp Equipment Co. of Buffalo and Rochester, N. Y., as sales representative for its road machinery equipment in the western part of New York State, including the counties of Wayne, Seneca, Schuyler and Chemung.

Joy Mfg. Co.: Has appointed State Equipment Co., 642 Market St., Kingston, Pa., as distributor of Joy construction equipment for 21 counties of northeastern and central Pennsylvania.

The Warner & Swasey Co.: Announces the appointment of Fred Malotte Machinery Co., Inc., Petersburg, Ind., as a distributor for the Gradall throughout 62 counties of central and southern Indiana, including Warren, Tippecanoe, Clinton, Howard, Grant, Delaware, and Randolph.

LeTourneau-Westinghouse Co.: Superior Equipment Co., 2221 S. 19th

(Continued on page 177)

"We cured 60 headaches by replacing 3 oils with 1"

For three years, a large midwestern road builder had engine troubles by the truckload. Sludge formed in the crankcases of *more than 60* trucks, bull dozers, scrapers and heavy roadbuilding machinery working under every condition from idling to moving tons of earth. Rings stuck. Valves were coated with heavy deposits. Oil had to be drained in 60 hours or less.

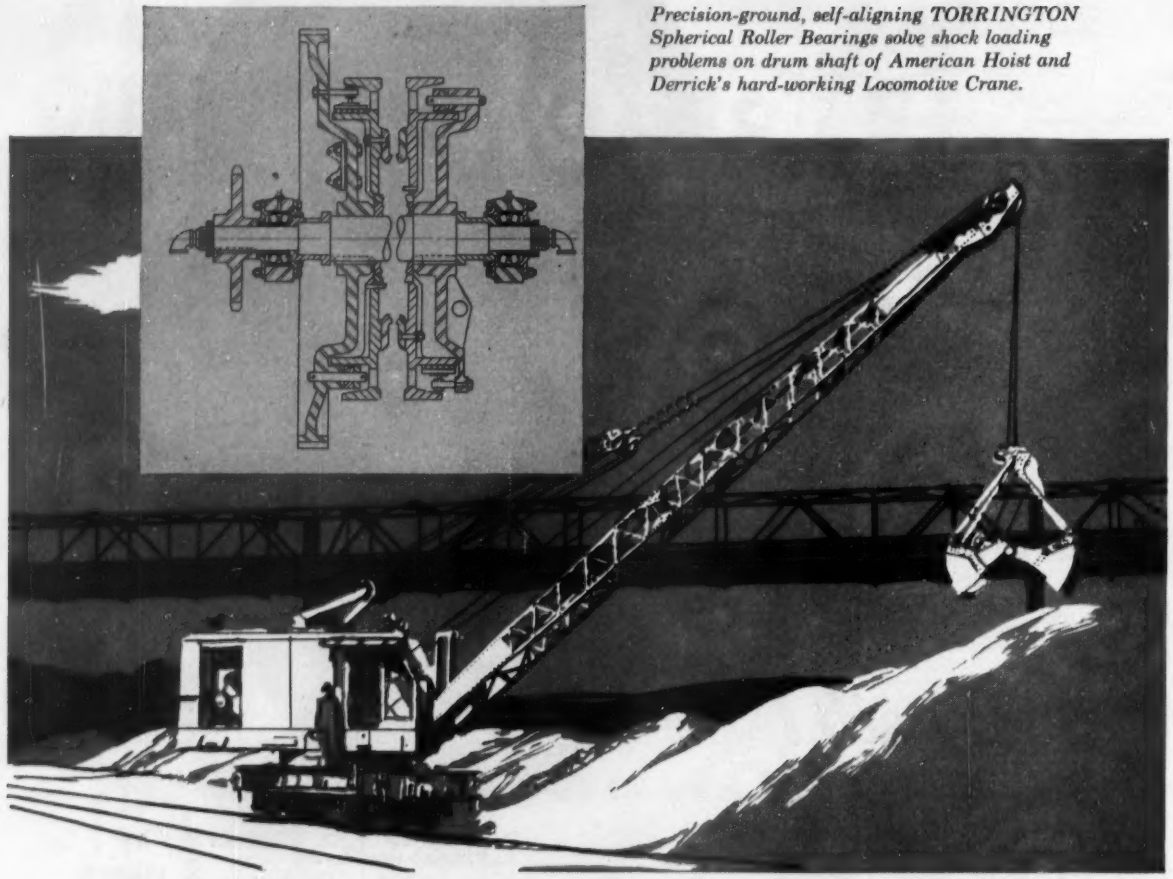
Sinclair Lubrication Engineer Carl Schmidt reports: "Oil breakdown was a big factor, even though the company was using three different oils. I suggested Sinclair TENOL®, pointing out that its superior qualities would offer maximum protection to heavy working engines, and at the same time prevent sludge formation during light duty operations. A test was conducted on 20 units using TENOL."

Engineer Schmidt continues: "The results have been excellent. Drain periods have been extended to 130 hours, with a big saving in oil. Engines are cleaner, with no valve chamber deposit. Stuck rings are a thing of the past. In addition to the direct gallon consumption savings, the use of *one* oil in place of *three* means more economical inventory control. TENOL proved so superior that after 30 days, all units were switched to this heavy duty oil."

SINCLAIR LUBRICANTS

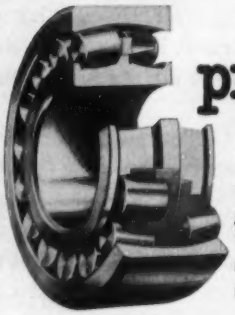
Why not give a Sinclair Lubrication Engineer the chance to help solve your lubrication problems. There's no obligation. Contact your local Sinclair office or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

TORRINGTON BEARINGS AT WORK



Precision-ground, self-aligning TORRINGTON Spherical Roller Bearings solve shock loading problems on drum shaft of American Hoist and Derrick's hard-working Locomotive Crane.

Where the best produce for less!



No doubt about it . . . in today's heavy-duty, high capacity processing equipment, the *best* bearings produce for less. This is why more and more builders and users call for TORRINGTON Spherical Roller Bearings—with these performance features:

Precision-ground contact surfaces—for even load distribution, maximum bearing life. *Accurate geometrical conformity between races and rollers*—for ultimate load carrying capacity. *Carefully heat-treated races and rollers*—for maximum resistance to shock and wear. *Bronze machined cage for each path of rollers*—for freedom of operation. *Integral center flange on inner race*—for positive radial stability and positioning for thrust loads. And self-alignment—for smooth service under shock loads at maximum speeds.

TORRINGTON Spherical Roller Bearings are available from stock with either straight or tapered bore, for shaft or adapter mounting. Use them in your own equipment—from screens and crushers to shovels and cranes—and watch your profits climb.

THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.

TORRINGTON SPHERICAL ROLLER BEARINGS

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers

SALES AND SERVICE . . .

Continued from page 174

Ave., Phoenix, Ariz., has been named equipment distributor for the entire state of Arizona.

Concrete Sawing Equipment, Inc.: Has appointed the Impex Corporation, Rockefeller Center, N. Y. C., to handle all foreign sales of Concut concrete sawing machines and the Jointmaster sawing machine. Impex will also handle foreign sales of Foothill concrete sawing blades for which Concrete Sawing Equipment is the exclusive national distributor.

Buck Equipment Corp.: Has added four new dealers for Buck automatically portable, heavy-duty hoisting machines and self-dumping concrete buckets—Akron Waco Scaffolding, Akron, Ohio; Allied Equipment, Inc., Miami, Fla.; H. S. Finke, New Orleans, La., and Fuchs-Clayton Machinery Co., Omaha, Neb.

Cleco Pneumatic Tool Div., Reed Roller Bit Co.: Lichtenberger Brothers, 2715 W. Lake St., Chicago, have been named distributors for Cleco Air Tools.

Gar Wood Industries, Inc.: Has appointed Gopher Equipment Co., Minneapolis, Minn., and Hi-Way Equipment Co., Houston, Tex., as distributors of its ¾-yd excavators and cranes. In addition, Hi-Way Equipment will handle ten models of Buckeye ditchers, spreaders and finegraders.

LeTourneau-Westinghouse Co.: Equipment Sales and Service, Ltd., 1235 Lawrence Ave. W., Toronto, has been named distributor for the LeTourneau-Westinghouse line of earthmoving and construction equipment for that portion of the Province of Ontario east of 86 deg longitude.

Osgood-General: West Coast Engine and Equipment Co., 1077 Eastshore Highway, Berkeley, Calif., has been appointed distributor of the full line of excavating and materials handling machinery for the San Francisco and northern California area, and the southern counties of Oregon.

St. Paul Hydraulic Hoist: Announces the appointments of Timpte Brothers, Inc., Denver, Colo., and Corts Commercial Body Works, Whitesboro, N. Y., as distributors in their areas of St. Paul's complete line of hydraulic hoists and dump bodies, Frate-Gate elevating end gates, Paxall compacting refuse bodies and Truck Patrol underbody road maintainers.

Caterpillar Tractor Co.: The formation of a new distributorship, Houghton-Arnold Machinery Co., which

(Continued on page 180)

There's never been anything like

LAUGHLIN'S Load Binder

BRAND NEW
new design, new economy, new convenience.

MORE USEFUL
one binder does the work of two.

GREATER SAFETY
drop forged strength plus non-slip locking.

HERE'S THE STORY:

The new LAUGHLIN LOADBINDER is a sturdy, drop forged, heat treated steel unit available in two sizes, each of which can use four different hook sizes. You buy only one handle assembly, attach two Laughlin clevis grab hooks to fit your chain. Change hooks in a jiffy with pliers or screwdriver.

Stronger, too, because swivel tongue swings on end of slotted jaw, won't spread under strain. Safe, because a positive cam lock action keeps it shut.

#1 Binder: U.T.S. 22,000 Lbs.	#2 Binder: U.T.S. 32,000 Lbs.
Hook sizes: ¼", 5/16", 3/8", 7/16"	Hook sizes: 3/8", 7/16", ½", 5/8"

Laughlin Clevis Grab Hooks are stocked by leading Industrial Supply, Wholesale Hardware, Oil Field, and other Distributors. Ask your distributor for information about the new loadbinder, or write for 4-page folder. It has complete description, specifications and users' comments.

For a complete listing of 1500 types and sizes of Laughlin wire rope and chain fittings, ask also for our Catalog 155.

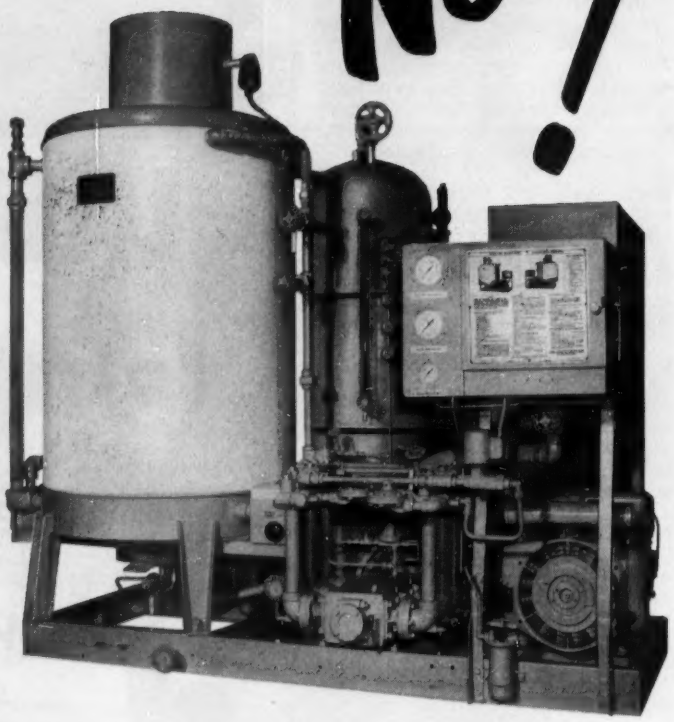
THE THOMAS LAUGHLIN COMPANY
514 Fore Street, Portland, Maine

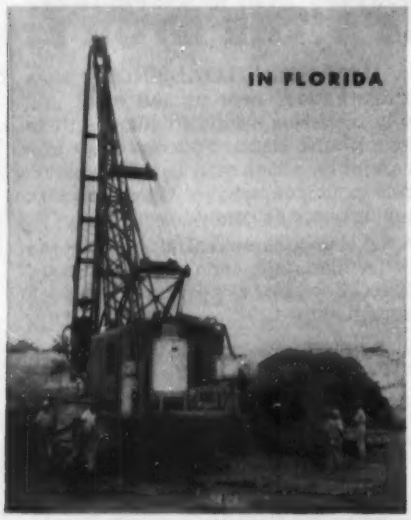
McKiernan-Clayton

STEAM GENERATOR

Reduces Pile Hammer Operating Costs from Coast to Coast!

New!





The McKiernan-Clayton Steam Generator is built expressly for McKiernan-Terry Corporation by the Clayton Manufacturing Company.

The new McKiernan-Clayton Steam Generator, built expressly to generate steam for pile hammers, is proving its worth across the country. Mounted on the tail of a Diesel crane, on a trailer, or on skids, the unit contributes to building a compact and economical pile-driving rig.

How the McKiernan-Clayton Steam Generator saves pile-driving dollars!

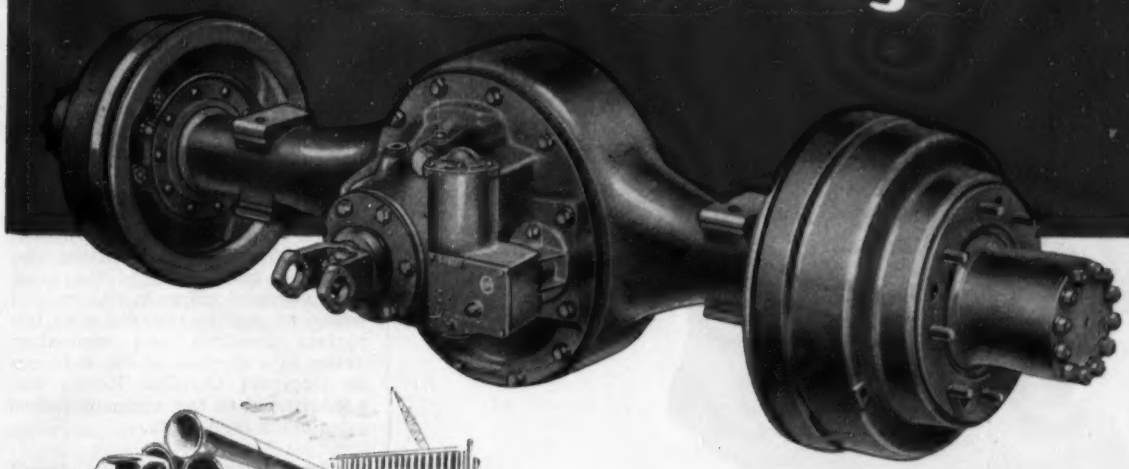
- *Inexpensive to mount:* no larger than a medium-sized air compressor.
- *Inexpensive to lift, tow or carry:* light in weight and completely self-contained on its steel base frame.
- *Inexpensive to operate:* quickly started, full-pressure steam in 3 minutes, fuel burned only for steam required by pile hammer.
- *Inexpensive to fire:* high efficiency, forced recirculation water system and continuous coil assure high heat transfer, giving greatest value for each fuel dollar spent.
- *Inexpensive to maintain:* high-strength steel construction, no side-wall refractory brick, packless pump, shock resistant.

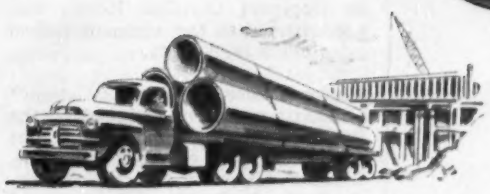
For additional information write for Bulletin 63.

McKIERNAN-TERRY CORPORATION
14 PARK ROW, NEW YORK 38, NEW YORK
Manufacturers of Pile Hammers and Extractors, Coal and Ore Unloaders and Bridges, Grab Buckets and Special Machinery.

MK352

Eaton 2-Speed Axles save engines, keep trucks on the job, reduce operating and maintenance costs, make trucks last longer





More than two million
Eaton Axles in trucks today!
For complete information, see your truck dealer.

Eaton 2-Speed Axles double the conventional number of gear ratios, enabling drivers to select a ratio to deliver pulling power or speed—the ratio best suited to road and load conditions. Engines operate in their most efficient and economical speed range, reducing stress and wear on engine and power transmitting parts, holding operating and maintenance costs to a minimum, adding thousands of miles to engine and over-all vehicle life. Eaton 2-Speed Axle trucks haul more, faster, longer, at lower cost—are worth more when traded in.

EATON
2-Speed Truck
AXLES

Axle Division
EATON MANUFACTURING COMPANY
CLEVELAND, OHIO

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

WELLMAN STONE GRAB

Moves the "big ones" faster!

THE Wellman Stone Grab thrives on rugged work. This tough grab is built with three jaws for gripping big, irregular-shaped stones with speed and safety. Develops tremendous closing force in its jaws. Welded construction and alloy steels give great strength with minimum dead weight. Available in 5, 10 and 15 ton sizes.

THE WELLMAN ENGINEERING CO.
CLEVELAND 4, OHIO

Mail coupon for free bulletin

The Wellman Engineering Company
7028 Central Avenue, Cleveland 4, Ohio

Please send me a free copy of bulletin on:

☐ Clamshell Buckets ☐ Stone Grabs
☐ Dragline Buckets ☐ Log Grabs

Your Name_____

Address_____

City_____ State_____

Position_____ Company_____

SALES AND SERVICE . . .

Continued from page 177

will serve the entire state of Maine with headquarters in Portland at 26 Warren Ave., has been announced.

B. F. Goodrich Co.: A new warehouse and office building to serve as Arizona state headquarters for the Tire & Equipment Division is now nearing completion in Phoenix, Ariz. Located in the Central Industrial District at 1345 N. 22nd Ave., the new structure will combine modern offices and warehouse area for serving the Arizona market. It is slated for occupancy by April.

On the Sales Front

Clark Equipment Co.: The appointments of Chester J. Tucker as field service manager and William E. Woodley, Gale H. Stokes and Cecil L. Starner as field service representatives of the Construction Machinery Division have been announced.

Barber-Greene Co.: Has announced the appointment of John Kocsis as service manager for the southern area, replacing Ralph Henricks who has been transferred to the company's general offices in Aurora, Ill., where he will be charged with important research and evaluation duties as a member of the Advance Development Division. Kocsis will headquarter at the company's area sales office in Atlanta.

Marion Power Shovel Co.: Clarence S. Jarvis has been assigned to the Birmingham, Ala., district office as a sales engineer covering Louisiana, Florida, Alabama, Georgia, Mississippi, North Carolina, South Carolina, Tennessee and part of Arkansas.

International Harvester Co.: Announces the appointment of Russel C. Burns as supervisor of the company's motor truck fleet sales and R. H. White as manager of the company's new Lubbock, Tex., motor truck district.

The Lincoln Electric Co.: Has added three men to its field staff of application engineers for servicing industrial users of arc welding. Jack Jaso has been assigned to the Chicago district; Walter Rockway is serving industry in the Cincinnati district and Chester Shira in the Florida district.

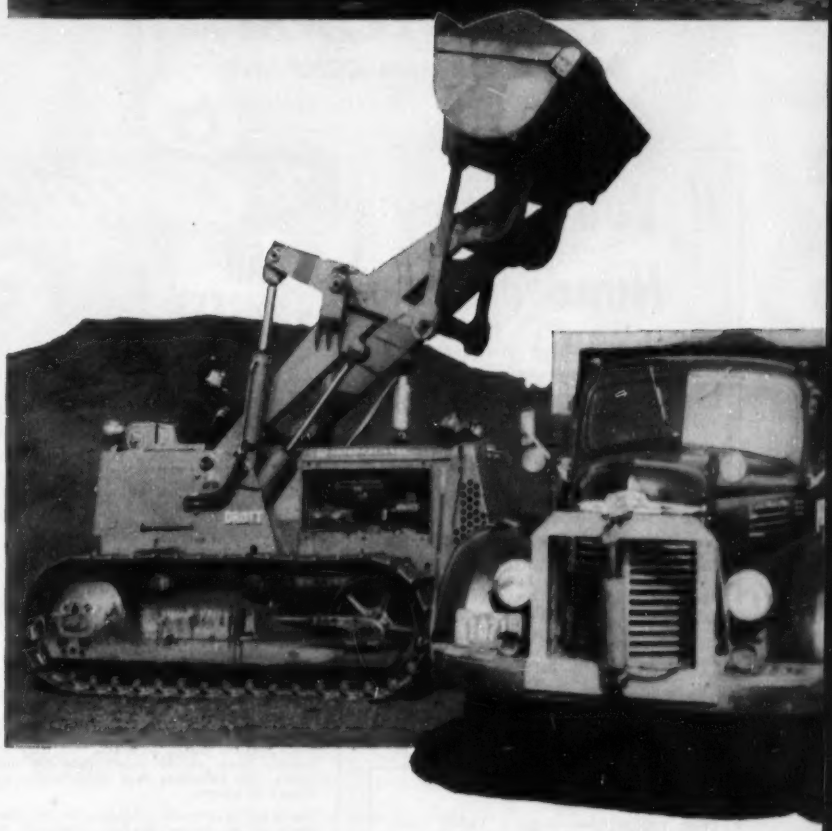
The Silent Glow Oil Burner Corp.: Has announced the appointment of Fred A. Kingston as sales manager of the company's Industrial Heater Division.

Chrysler Corp.: Appointment of J. Emmett O'Malia as supervisor of sales engineering for Chrysler Ma-

(Continued on page 182)

"The use of MAN-TEN steel enables these units to carry heavier payloads . . . *without increasing weight on tractor,*"

says ED DROTT, Jr.
Vice President, Drott Mfg. Corporation
Milwaukee, Wisconsin



• How do you make equipment stronger—able to do more—without making it bigger and heavier? One way, as the Drott Mfg. Corporation has proved in the construction of their famous Skid-Shovels, is to build vital parts of USS MAN-TEN High Strength Steel. In both models—TD-9K3 and TD-14K3—MAN-TEN steel was used in three important parts. In the bucket, the substitution of MAN-TEN steel for carbon steel reduced weight and provided better abrasion resistance. In the push-frames and radiator guards it reduced weight without sacrificing strength.

* * *

DROTT and other such companies have long used USS MAN-TEN steel—and other USS HIGH STRENGTH STEELS—to assure fewer breakdowns, longer service, lower maintenance and replacement costs for all kinds of heavy-duty, hard-working earth-moving equipment. This is convincing proof of the ability of these steels to give equipment the *stamina to stay on the job.*

USS MAN-TEN, USS COR-TEN and USS TRI-TEN steels resist wear, impact and abrasion. They have a yield point 50% higher than ordinary steel. And they resist atmospheric corrosion, too.

The big fact, however, is that you can give your equipment these properties *without increasing weight.* Or, you can use USS HIGH STRENGTH STEELS in lighter sections and actually *reduce weight* without reducing the stamina and ruggedness you had before.

We'll tell you more if you'll contact our nearest District Sales Office. We will also send you upon request a free copy of our new COR-TEN steel book, just off the press. Write on your company letterhead.

UNITED STATES STEEL CORPORATION, PITTSBURGH · AMERICAN STEEL & WIRE DIVISION, CLEVELAND · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS HIGH STRENGTH STEELS

USS

4-1000

UNITED STATES STEEL

SANSTORM IT!

blast your cleaning costs

More and more construction companies are cleaning steel fabrications, masonry, forms, equipment cheaper and quicker with Sanstorms — the sandblasting machines unequaled for low cost service.

Because Sanstorms are non-plug with any abrasive the job requires — *gentle* to smooth off or *tough* to skim off heavy scale — you get trouble-free performance with a Sanstorm.

Write today for **FREE** literature. Add any questions about your cleaning problems for Sanstorm recommendations without cost or obligation.

SANSTORM
MANUFACTURING COMPANY
P. O. BOX 1173-5, FRESNO, CALIFORNIA

If You Employ Hundreds

or only a few persons in your business you MUST SEE Greenwood's Approved Payroll Record Sheet—most widely used in the United States. Cost is moderate.

With the minimum effort and expense, you are ready for every required quarterly payroll report. You have clear and complete figures available instantly for a U. S. Inspector who may wish to check your payroll records.

You can start using these records any day in the year. Write for specimen samples. They will be sent promptly FREE OF CHARGE. Just fill in the coupon below and mail.

THE GREENWOOD CO., Dept. 10
712 Federal St., Chicago 5, Ill.

THE GREENWOOD CO., Dept. 10
712 Federal St., Chicago 5, Ill.
Please send specimen sample of Payroll Record Sheets—FREE OF CHARGE. Also price list—scaled by quantity.

Name .....
Address .....
City ..... State .....

The "Canton" CAR TRANSFER

Loads Entire Train on Single Track

Out going dirt—incoming liner concrete, no alterations to track, with the "Canton" Car Transfer. Less rib to shoot, than for jump switch. Less hazardous than cherry picker. Car always on wheels.

You make spectacular savings with full speed ahead at the loader. Used by mines and big tunnel operators everywhere. *Self Liquidating, short time.*

In writing please use street and zone numbers.

AMERICAN MINE DOOR CO.
2077 Dueber Ave., Canton 6, Ohio

SALES AND SERVICE . . .

Continued from page 180

rine and Industrial Engine Division has been announced.

Perfection Steel Body Co.: The appointment of John A. Record as north central United States sales representative has been announced. He will headquarter in St. Paul, Minn.

The Galion Allsteel Body Co.: Has appointed Edward R. Curry as southwestern regional sales manager with headquarters in Tulsa, Okla. Leo M. Brown is the new western sales manager with headquarters in Galion, Ohio.

Construction Machinery Co.: Announces the appointment of Edward R. (Ed) Daley as its west coast representative to work with CMC distributors in the seven western states. His headquarters will be in Burlingame, Calif.

Ramset Fasteners, Inc., Div. of Olin Industries, Inc.: Announced the appointment of Charles H. Schminke as field sales manager.

Highway Equipment Co., Inc.: Announces the appointment of Phil Terry as new eastern district manager for the company with headquarters in Carlisle, Pa.

Soiltest, Inc.: Announces the appointment of M. D. Morris as their eastern representative with offices at 545 Fifth Ave., New York 17.

In the Main Office

Caterpillar Tractor Co.: Louis B. Neumiller was elected chairman of the Board at a meeting held March 30 at the company's corporate office in San Leandro, Calif. Harmon S. Eberhard was elected president to succeed Mr. Neumiller, who has been Caterpillar's president for the last 12 yr. At the same meeting, the Board voted to discontinue the Executive Committee.

Barber-Greene: Has named the following to new positions—Ed Holt, vice-president, sales; S. E. Faircloth, vice-president and production coordinator; Jack Turner, vice-president, publicity and promotion; H. E. Herting, vice-president, comptroller; Roy Heacock, vice-president, manufacturing and engineering; John Spence, treasurer; W. Alex Greene, secretary; Urban Hipp, assistant treasurer; and F. J. Merrill, assistant secretary.

Koehring Co. of Calif.: Harry R. Powers was named vice-president and general manager with headquarters in Stockton, Calif.

(Continued on page 185)

WHY NOT CHOOSE IT TO BEGIN WITH?

Do away with costly, early bucket replacement

Field reports indicate a great preference for Amsco manganese steel buckets over ordinary steel, for replacement on hard-working field equipment.

It is false economy to wait until replacement time to specify Amsco, when these sturdy manganese buckets are available on original equipment.

With your next new equipment order, specify durability and long life right on your purchase order . . . *specify Amsco manganese steel buckets.*

Brake Shoe

AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

"Torqmatic Drives Cut Costs"

Heading down a rock-strewn grade with a 40-ton payload at Gavins Point Dam, this bottom-dump "Euc" easily takes the rough going with Allison's TORQMATIC DRIVE transmitting engine power.

Western Contracting Corporation started saving money when the firm put a fleet of TORQMATIC-equipped 27-yard Euclid bottom-dumps to work at Gavins Point Dam. Company officials report:

"Clutch repairs are eliminated in the TORQMATIC-equipped units because there's no clutch pedal for drivers to push. Clutch life averages 90 days in a fleet of direct-drive trucks also working for Western on this job.

"Used to lose as many as 4 drive lines a week with drivers *manually* coordinating engine and drive line on the direct-drive units . . . *never lost a drive line* with TORQMATIC DRIVES."

On TORQMATIC-equipped trucks, drivers quick-shift at full throttle—have only 3 forward speeds (instead of the usual 7 or 10) to handle all loads and grades. The converter-transmission team eliminates gearshift guess and gearbox clash. TORQMATIC DRIVES have such an excellent operating record on this job that the operator intends to specify them in future equipment orders.

If you're one of the men who's changing the face of the earth, do it better and at less cost with Allison TORQMATIC DRIVES in your units. For more information, ask your equipment dealer, manufacturer or write:

Allison Division of General Motors
Box 894T, Indianapolis 6, Indiana

ALLISON TORQMATIC DRIVES

Unbeatable Team for Maximum Operating Economy

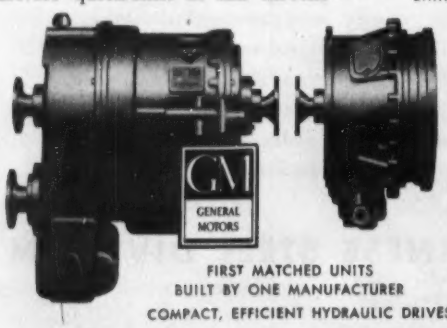
Reduces maintenance costs by absorbing shock—eliminates engine lugging—prolongs equipment life.

Holds power to load at all times—no clutch pedal to push—no gearshift guess.

Quick-Shifts at full throttle with finger-tip hydraulic control.

Only torque converter-transmission team designed to work as a unit and built by one manufacturer.

Cuts driver training costs.



FIRST MATCHED UNITS
BUILT BY ONE MANUFACTURER

Allison

TORQMATIC DRIVES

COMPACT, EFFICIENT HYDRAULIC DRIVES FOR CRANES • TRUCKS • TRACTORS • SCRAPERS • SHOVELS • DRILLING RIGS

SALES AND SERVICE . . .

Continued from page 182

Special Mention

Marlow Pumps, Div. of Bell & Gossett Co.: Announced the establishment of a new branch manufacturing plant at Longview, Tex., 125 mi east of Dallas. The new plant's location in the rapidly developing industrial center of east Texas offers vastly improved shipping facilities and will offer even faster service to Marlow's customers. The company's plant in De Queen, Ark., as a result of the improved service afforded by the Longview plant, will be shut down and all operations formerly conducted in De Queen will be transferred to Longview.

Armco Steel Corp.: Has acquired Southwest Steel Products, a steel fabricating company located in Houston, Tex. Russell L. Jolley, president of Southwest, will continue actively in charge of the business which will be operated as a wholly owned Armco subsidiary under the general direction of R. L. Gray, vice-president of Armco.

Thor Power Tool Co.: Has expanded its power tool manufacturing operations into the low price electric tool market with the purchase of the Speedway Manufacturing Co., of Chicago. Thor's newly acquired company will continue with the same personnel at the Chicago plant, and under the same executive management, including William B. Scace, Speedway president and Jack R. DeBacher, vice-president. It will operate as the Speedway Manufacturing Division of Thor Power Tool Co.

Clark Equipment Co.: Has established a Ross Carrier Division for its Ross line of straddle carriers. A. H. Peirce has been named division manager, and Roger Spencer will continue as chief engineer. The Ross carriers will continue to be manufactured at Benton Harbor and marketed through the Industrial Truck Division.

Clark also announced steel erection has started for its new manufacturing plant on a 100-acre tract of land on the outskirts of Benton Harbor. It is expected to be in operation by the end of 1954.

Davey Compressor Co.: Has purchased all manufacturing rights to the complete line of portable rotary drilling units previously produced by Engineering Laboratories, Inc., Garland, Tex. An announcement stated that transfer of all Engineering Laboratories operations to Kent, Ohio, is now under way and that delivery schedules will be rigidly maintained. Drill unit manufacturing operations will be handled by a newly established Davey Rotary Drill Division,

PREFACE TO ALASKAN POWER

Naylor light-weight pipe is right at home on construction jobs like this dredging operation which is paving the way for hydro-electric power in Alaska.

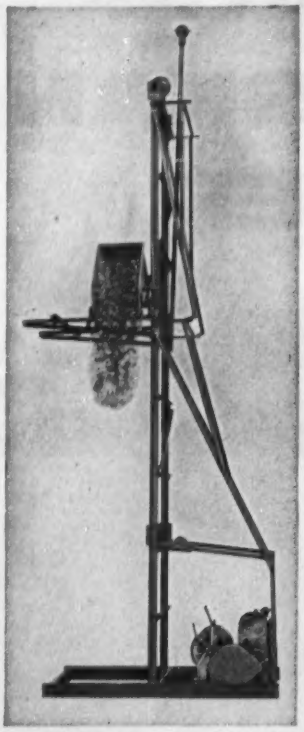
This distinctive lockseam-spiralwelded pipe provides the extra strength for heavy duty service, yet its light-weight assures easy handling and installation.

Find out today how well Naylor pipe can fit into your operations—whether you need high or low pressure air or water lines. Ask for Bulletin No. 507.

NAYLOR PIPE

Naylor Pipe Company • 1268 East 92nd Street, Chicago 19, Illinois

Eastern U.S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York



OK ... The Leading Name in PORTABLE ELEVATORS

The OK Portable Elevator, designed and built to help speed construction, has enthusiastic approval from contractors all over. It is completely portable, easy to assemble, can be adjusted to any height, and used in many ways. OK builds three sizes of these time-saving Elevators which have varying load capacities from 1000 to 2500 lbs.

OK also manufactures OK Air Compressors, OK Hoists and OK Winches. Get the information and specifications on all the OK products today.

O. K. MACHINERY DIVISION — OK — COLUMBIA, PA. U.S.A.

1974 Florence St. Columbia, Pa.

SALES AND SERVICE . . .

Continued

and a substantial portion of the Engineering Laboratories key personnel will be retained.

Bucyrus-Erie Co.: A new churn drill tool repair service is now available to blast-hole drill users in eastern states at the Bucyrus-Erie sales and service station at Englewood, N. J. An addition to the existing service station at 214-216 S. Dean St., has been erected to handle the new facilities. It houses a new machine shop which has been completely equipped with machines capable of handling any type of drill tool repair or reconditioning.

Association Activities

National Sand and Gravel Assn.: R. P. (Bob) McKenrick, manager, Construction Equipment Department, Blaw-Knox Co., has been elected chairman of the Manufacturers Division of the association at its annual meeting held in Chicago.

Asphalt Institute: Has announced the appointments of Dillard D. Woodson as district engineer with headquarters in Mortgage Guarantee Building, Atlanta, for Alabama, Florida, Georgia, South Carolina and Tennessee; and Frank H. Gardner as district engineer with headquarters at 45 N. Lake Ave., Albany, for New York State excluding New York City and Long Island, which will continue to be served by Herbert Spencer.

Internal Combustion Engine Institute: J. E. Heuser, Engine Division sales manager of the Le Roi Co., subsidiary of the Westinghouse Air Brake Co., was elected president of the institute at its annual meeting in February. Other officers elected were—vice-president, B. G. VanZee, chief engineer, Minneapolis-Moline Co. of Minneapolis; secretary, H. W. Smith, consulting engineer, Engine Division, Caterpillar Tractor Co. of Peoria; and treasurer, J. D. Cook, secretary-treasurer of the Hercules Motor Corp., Canton, Ohio.

The Asphalt Institute: Has announced the appointment of Robert B. McKeagney as district engineer for the New England area, with office at 585 Boylston St. in Boston. In this area he succeeds Edward M. Howard whose new territory includes Arkansas, Illinois, Missouri and Wisconsin, with headquarters in the Leland Office Bldg. in Springfield, Ill.

COMING ... in July
Equipment-Maintenance Directory

INDIAN
DRINKING WATER & SUPPLY TANK
No. 75G

Replaces unsanitary open bucket and dipper. Completely sanitary. Lasts for years. Chrome, push button faucet. Widely used by contractors all over United States.

The INDIAN Drinking Water & Supply Tank may be carried on the back to all points on the job. May also be used for carrying soft drinks, coffee, etc. Saves time. Improves worker morale.

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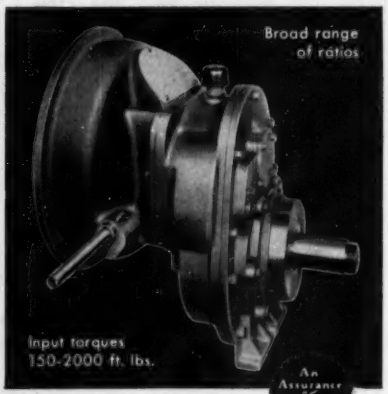
"Choice for Quality the World Over"
450 Main St., Utica 2, New York



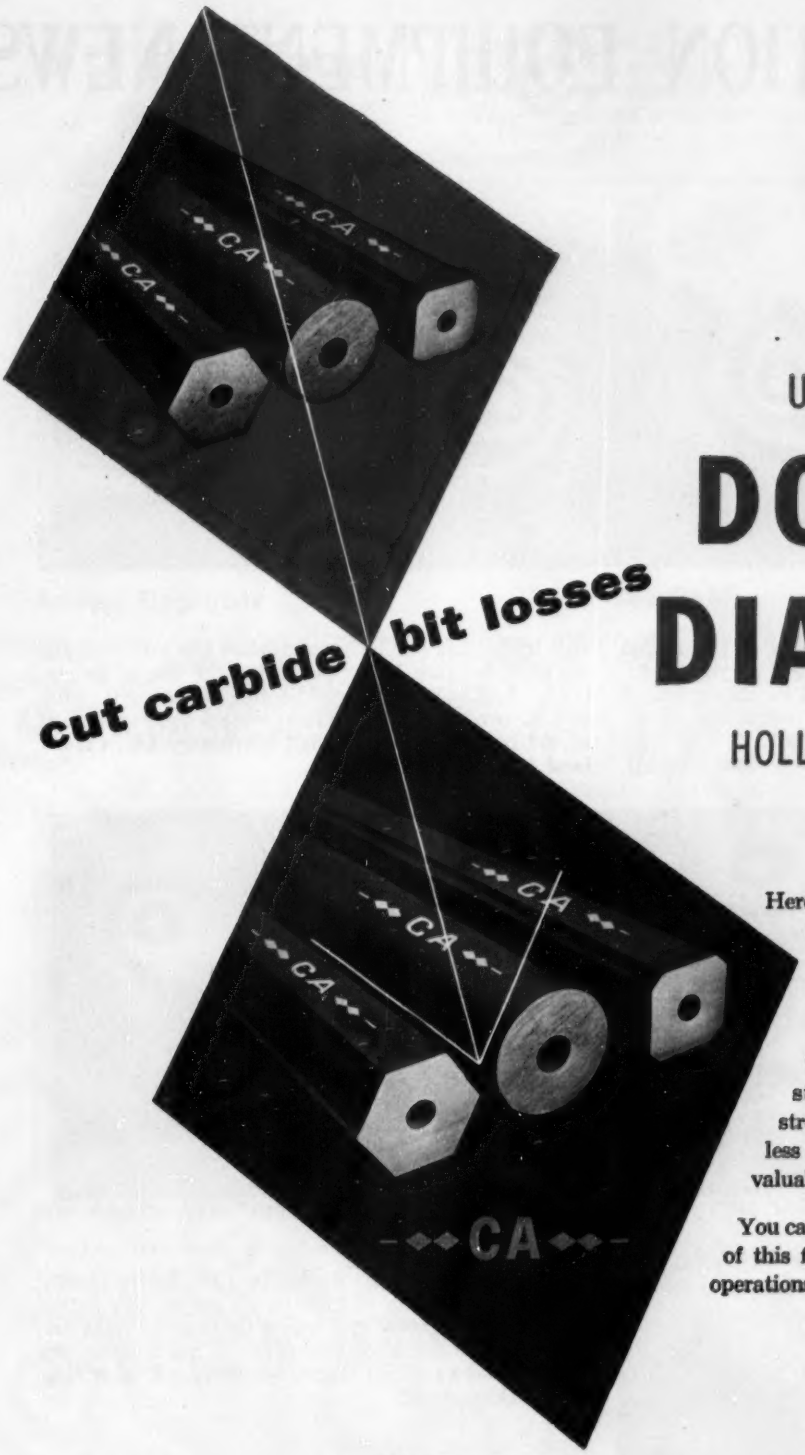
Special heavy-duty

- Transmissions
- Reduction Units
- Mechanical Drives for Torque Converters

Cotta Transmission Co., Rockford, Illinois

COTTA HEAVY-DUTY TRANSMISSIONS

"Engineered-to-order"



cut carbide bit losses

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HOLLOW DRILL RODS

Here's the finest, toughest hollow drill rod made. Crucible DOUBLE DIAMOND is made to tool steel specifications by the nation's leading producer of tool steels.

That's why it has greater fatigue strength . . . and greater fatigue strength means lower drilling costs — less down time and fewer losses of those valuable tungsten, carbide bits.

You can't afford to overlook the advantages of this fine alloy drill rod in your drilling operations. Write for full details.

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54 years of Fine steelmaking

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CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

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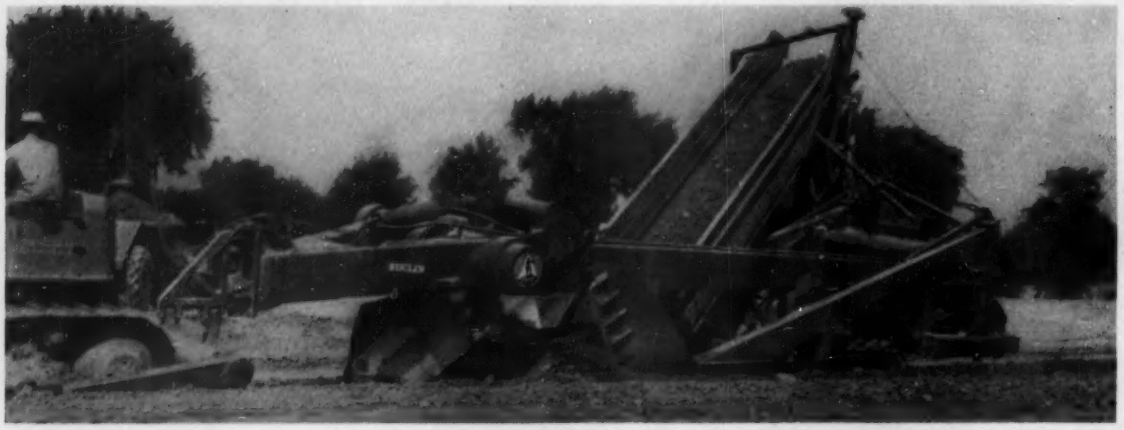
CONSTRUCTION EQUIPMENT NEWS



Biggest of Them All

The Paul Bunyan of the dirt movers is the Euclid Model BV. It can handle up to 1,200 cu yd per hr. It's pulled by a crawler tractor, and its conveyor belt is powered by a diesel engine at the rear of the loader. It can cut a swath 9 ft 6½ in. at a depth of 48 in. Both the tractor and loader are controlled by one operator. This loader has helped revolutionize the earthmoving industry, because it has permitted the use of larger, faster and more efficient hauling equipment with greater production. This Giant weighs approximately 65,400 lbs.—**The Euclid Road Machinery Co., Cleveland 17, Ohio**

The Sierra Loader

Here's another big dirt mover It's the Sierra Loader and can produce up to 1,000 cu yd per hr. It's pulled by a crawler tractor and uses a Caterpillar D318 engine to drive the 27-ft conveyor. It has a 50-in. dia disk. It has excellent maneuverability.—**C & D Mfg. Co., Perkins, Calif.**

←

Terracer Type

This terracer is named The Tucker and mounts directly to Farmall wheel-type tractors. It is P.T.O. driven and has a 28-in. revolving disk. The elevator length is 6½ ft, conveyor belt width is 24 in., and over-all width is 13 ft. It is operated by three hydraulic controls located at operator's right.—**The Firman L. Carswell Mfg. Co., Kansas City, Kan.**

...Take Your Pick

Call them elevating graders, terracers, casters or loaders . . . take your choice. We'll confess until we started collecting photographs of such units, we never realized there were so many different makes. No doubt we've missed a few, too. They range in size from the small terracer to the giant Euclid-type loader, but they all have one important function in common . . . moving dirt.

Adams Elegrader

The most popular of elevating graders are those used with motor graders. This one called the Elegrader is used with the Adams motor grader. It has a 36-in. trough belt and will handle 800 to 1,200 cu yd per hr. It is an easy-mounting job.—**The Reisser Corp., Blair, Neb.**

The DoMor

A very popular elevating grader is the DoMor used with Caterpillar No. 12 and 112 motor graders. Production averages from 400 to 800 cu yd per hr. The carrier width is 42 in., and it uses a 30-in. disk. It can discharge a load as high as 12 ft.—**Ulrich Products Corp., Roanoke, Ill.**

For Austin-Westerns

Casting, stripping, loading and terracing can be done with Austin-Western motor graders, Models 99 and 99H, with this Midwest Elevating Grader attachment. Production will vary from 700 to 1,800 cu yd per hr, depending on model and operation.—**Midland Engineering Corp., Cedar Rapids, Iowa**

Galion Has One, Too

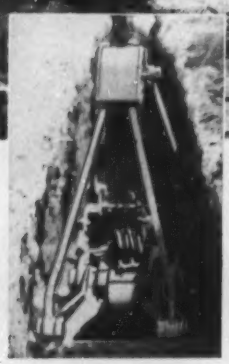
Galion motor graders use a B&L elevating grader attachment to handle side placement of dirt. This attachment has a belt width of 42 in., conveyor length of 16 ft and a 30-in. disk. It is operated by hydraulic controls. Capacity is up to 1,800 cu yd.—**Barnard & Leas Mfg. Co., Inc., Cedar Rapids, Iowa**

Hancock-Allis-Chalmers Unit

A newly designed elevator attachment for use with AC motor graders is the Hancock Elevator. Its capacity is up to 1,200 cu yd per hr. The plow beam is adjustable and it has a 30-in. disk. Conveyor length is 19 ft and it has a hinged conveyor for transit. Three point attachment provides easy mounting.—**Hancock Mfg. Co., Hitchcock, Tex.**

Top notch efficiency in

DEEP DOWN SPOT DIGGING...



Tangible, valuable features contribute to the exceptional trench excavating of

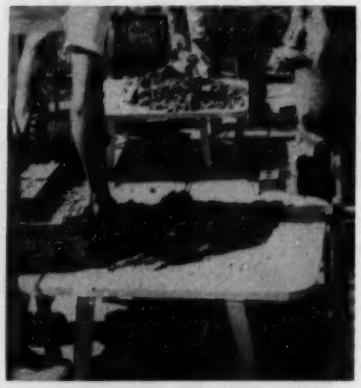
OWEN BUCKETS

Basic features include: *correctly designed shells* for easy penetration and discharge—*removable counterweights* to help force the shell into material and the block and tackle principle of multiplying closing power.

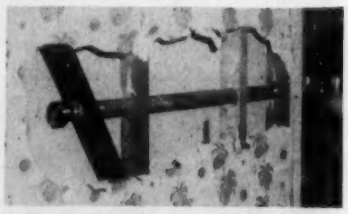
Others are *low headroom* that makes handling easy—*low center of gravity* that aids in placing the bucket when below the line of vision and *side cutters* which cut clearance for the bucket and aid in maintaining parallel trench walls.

BUCKETS AND GRAPPLES
Write for Catalog

THE OWEN BUCKET CO.

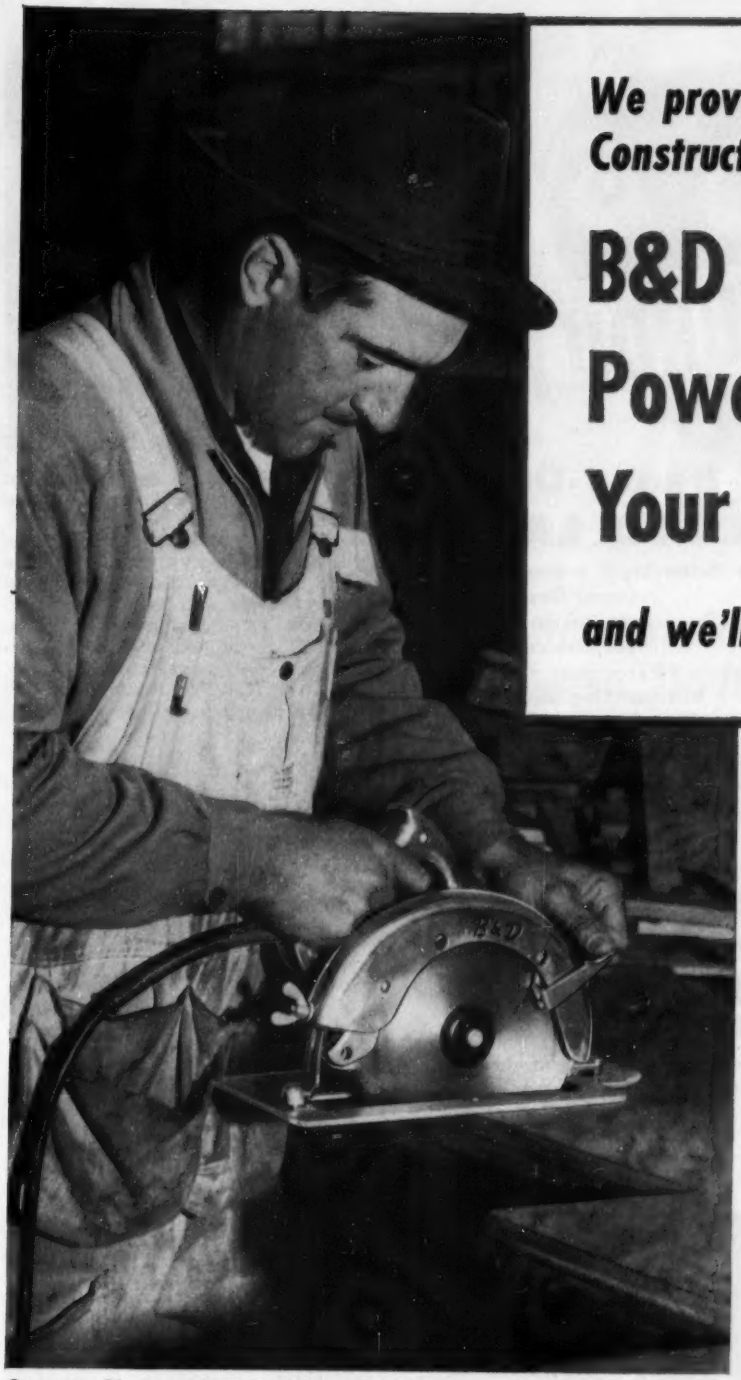


METAL MORTARBOARDS—These metal mortarboards are 32 in. square and come with 12- or 18-in. demountable legs, or without legs. They are made of 16-gage galvanized steel coated with aluminum paint. They are particularly suitable for bricklayers, blocklayers, plasterers, contractors, and builders.—**Knickerbocker Stamping Co., Parkersburg, W. Va.**



BORING TOOLS—Costly remodeling jobs can be cut to a minimum by Industrial Boring Tools, according to an announcement just released. The drill head fastens directly to pipe with standard fittings so that the pipe drills its own hole. On-the-job extensions out of pipe can be made to any desired length. Features a magic circle guide ring which regulates depth of cut on large size bits, and makes entering and breaking through on extreme angles both possible and completely safe. Ten sizes from ⅝ to 2 9/16 in. are available. Further information can be obtained by writing to **Time Saver Tools, Inc., Mundelein, Ill.**

RIG FOR TRUSSED RAFTER CONSTRUCTION—A new and practical fabricating bench on which all four members of modern Teco trussed rafters may be cut and grooved has been designed by Timber Engineering Co., a research affiliate of the National Lumber Manufacturers Association. Scale drawings of the fabricating bench layout, and copies of a new booklet, "How to Build Wood Frame Teco Trussed Rafters," are available without charge to builders, architects, and engineers. Address such a request to **Timber Engineering Co., Dept. FB, 1319 — 18th St., N.W., Washington 6, D. C.**



Carpenter Alonso makes cut with new B&D Saw. Note unique blade guard retractor.

We proved it to Barrett Construction Company

B&D Saws have Power to do all Your Jobs...

and we'll prove it to YOU!

THE new B&D Heavy-Duty Saws are packed with power . . . thanks to their B&D-designed-and-built motors . . . motors that are custom-built so that B&D Tools *will* do all the jobs they're designed to do.

On the job site of a multimillion dollar project in California, we proved it to carpenters of the Barrett Company. We demonstrated these new saws . . . pointed out their new features . . . let the carpenters try them for themselves.

Said carpenter E. M. Alonso, "Very good motor. New lever . . . will save more fingers than anything ever put on a saw. Very light. Cutaway upper guard is very helpful. Nice heavy shoe. I like the double depth-of-cut adjustments. Perfect balance. Handy for all jobs."

No wonder Black & Decker Heavy-Duty Saws rate so high . . . they were designed and built *from the job up!* B&D Saws have all the features requested by carpenters, builders, contractors. They have the capacity to do every job faster, easier, with greater safety.

Investigate these time-and-money-saving B&D Saws. Four models, in 6-, 7-, 8-, and 9-inch blade diameters. Priced from $64.50. See your B&D outlet, or contact him for an "on-the-job" demonstration. And write for free Catalog Number 513. Address: THE BLACK & DECKER MFG. CO., 630 Pennsylvania Ave., Towson 4, Maryland.

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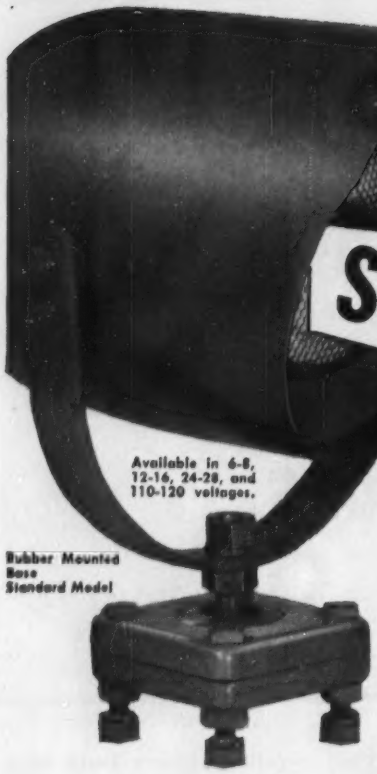
For nearest outlet see "Tools-Electric"

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS



STURDILITE

Available in 6-8, 12-16, 24-28, and 110-120 voltages.

Rubber Mounted Base Standard Model

Heavy-Duty FLOOD LAMPS

For Better Light • Longer Service • Lower Cost

Especially Designed for Efficient Service on

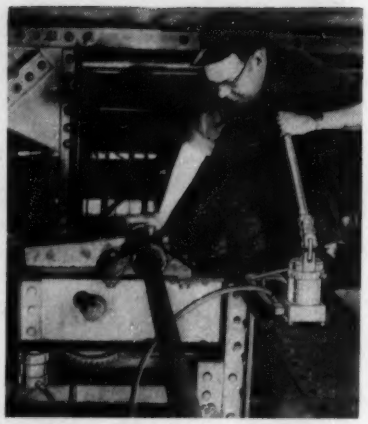
Shovels • Excavators • Drag-Lines • Roadbuilding Equipment Locomotive Cranes • Tractors . . .

Metal Spinning Division

PHOENIX PRODUCTS CO.

4729 N. 27TH ST. • MILWAUKEE 16, WIS.

Write for Illustrated Bulletin.



POWERFUL JACKS—Here's a jack that weighs only 38 lb and can raise as much as 30 tons. It is called the Lo-Hite Jack and is particularly useful for the heavy, hard-to-handle jacks formerly used on overhead crane servicing. It can be operated from the ground, stands only 6½ in. at its highest, and will fold into a compact, easy-to-carry unit 4½ in. high. It is manufactured by the **Duff-Norton Mfg. Co., Pittsburgh, Pa.**

a SAFE Bet!

You're sure to win with these easy-wheeling Sterling barrows. Why? Because Sterlings are made to outlast any barrow on the market. Sterlings are engineered and built to take hard punishment, over a long period of years. That's why they cost less. Get the facts. Write for Catalog No. 63A.

STERLING C5W

Maximum capacity 5 cu. ft. 16 gauge tray, all-welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

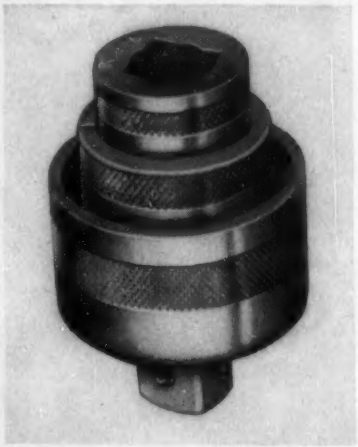
DEALERS: Write for Our Non-Exclusive Selling Plan.

Choice of wood handles or tubular steel frame . . . steel wheel or pneumatic tired wheel.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

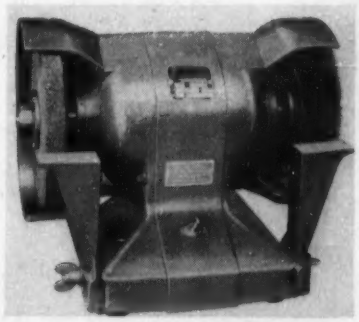
Look for this Mark of STERLING Quality

Sterling WHEELBARROWS



RATCHET ADAPTER—A new heavy-duty ¾-in. square drive ratchet adapter is claimed to be the safest ever made. The Sweeney Model 67A converts any combination of work handle, extension, socket or torque wrench into a reversible, ratcheting action tool. It provides ratcheting speeds on many nuts where application of standard ratchet wrenches is impractical. The ratcheting action of the Sweeney adapter requires a handle movement of only 10 deg and permits efficient use in limited spaces. It eliminates protruding levers and buttons and employs a completely encircling reversing collar which minimizes the possibility of unintentional reversal. It has a 2½-in. maximum diameter and 3¾-in. over-all length. It weighs slightly more than 2 lb and is available from the **B. K. Sweeney Mfg. Co., 1601 23rd St., Denver 17, Colo.**

WARNING STRIPES—Brilliant, diagonally striped warning signals in quick-to-apply, self-sticking tape form are called Brady Warning Stripes. They are applied permanently to any clean, dry surface without moistening. They come in handy rolls 1, 1½, 2 and 3 in. wide. The user can choose from three bright color combinations: Yellow and black stripes, black and white stripes, and red and white stripes.—**W. H. Brady Co., 727 W. Glendale Ave., Milwaukee 12, Wis.**



BENCH GRINDER—A new ¼-hp bench grinder has just been added to the Black & Decker line of 6-, 8- and 10-in. bench grinders. This one is called the 6-in. Standard Ball Bearing Bench Grinder and is designed for intermittent shop use in grinding, tool sharpening, wire brushing and buffing. It weighs 25 lb, is 9 in. high, and has an over-all spindle length of 12 in. Wheel size is 6 in. in diameter with a ⅝-in. face and ½-in. hole. The motor operates on standard ac single-phase voltages exclusively, and is not designed for operation on dc.—**The Black & Decker Mfg. Co., Towson 4, Md.**

CHEMICAL DERUSTER—Chemists in a cleaner solvent plant in Vallejo, Calif., claim to have solved one of the maintenance man's biggest problems. They have developed chemicals that derust without harming the generic metal, while at the same time cleaning and lubricating. It is called a lubricant cleaner or lubricant rinse. The inventors claim it prevents clogging and sticking of moving parts because of dirts, oils, erasures and inks. It is sold under the trade name of Technilube and is available from the **Zel-Tex Chemical Co., 425 Bush St., San Francisco, Calif.**

(Advertisement)

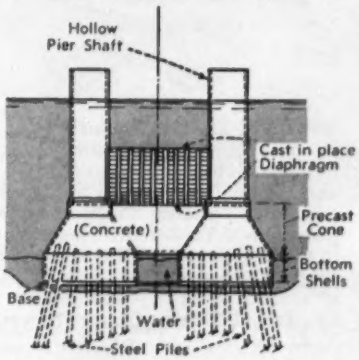
PHOTO BY E.N.R.

PRECASTING 90-TON SHELLS to be used as part of concrete piers for Richmond-San Rafael bridge requires thorough vibration to produce dense, high strength concrete, accurate finished surfaces, and prevent voids inside the sloping forms. Windows aid concrete placement.

Vibration makes strong, accurate precast shells for bridge piers

Precast reinforced concrete shells assembled underwater and filled with tremie concrete will provide 53 of 62 deep water bell bottom piers for the Richmond-San Rafael bridge on San Francisco Bay. Joint venture contractors Ben C. Gerwick, Inc. and Peter Kiewit Sons Co. developed the technique in preference to using steel shells that cannot be recovered. State engineers estimate that the design saves about $1 million over conventional methods investigated.

Reusable steel forms and careful placement and vibration produced uniform close tolerance surfaces and dense concrete free of voids on this job. These are just as important in other modern concrete techniques such as precast and prestressed girders, pressure pipe, and architectural work.



ASSEMBLED PIER consists of a base, a cylindrical bottom shell 9 feet high, the truncated cone section (cast in pairs, connected by a rectangular diaphragm) and a hollow cylindrical shaft, all precast. Entire structure is filled in place with tremie concrete.

• **Thorough vibration** is an essential part of the careful casting technique needed to produce the strength and accuracy required by the job. The shells, which vary from 14 to 34 feet in diameter, are cast in a yard about twenty miles from the bridge site, barged to the site and handled by a floating derrick. Vibration with VIBER high speed internal vibrators gives dense concrete, well bonded to reinforcing steel. This makes the shells salt water resistant to minimize steel corrosion and strong enough to be handled by lifting.

Accuracy of finished surfaces on the shells is doubly important. True surfaces make assembly underwater much easier. Good fitting joints also keep to a minimum loss of tremie concrete when the shell is filled after it has been assembled in place.

• **For complete details** on this interesting job refer to Engineering News-Record, March 4, 1954, and Construction Methods and Equipment, December 1953, March, April 1954. For information on the complete VIBER line of external and rubber tipped internal vibrators contact your authorized distributor, or VIBER COMPANY, 726 South Flower St., Burbank, California.

VIBER

Dept. 68

CONCRETE VIBRATORS SINCE 1931

6,000 E-Z SHORE CLAMPS

SPEED CONSTRUCTION ON THIS BUILDING

Brown-Schrepferman & Company speed construction on this multi-story department store building in Denver, Colorado with E-Z Shore Clamps.

SAVES LUMBER

2x4's and 4x4's are used over and over. E-Z Shore clamps eliminate nailing, sawing, splitting or discarding of shoring timbers

CUTS LABOR COSTS

Shoring floors for concrete is completed with less labor, skilled or unskilled. No measuring, sawing, bolting or spiking necessary.

SAVES TIME

Shores are set up or dismantled in half or less time. Use for irregular surfaces (arches, stairways), to build scaffolds, takes tension as well as compression loads.

GET COMPLETE DETAILS

WRITE TODAY ...for prices and details on direct purchase, rental or trial plan on the original side-swing E-Z Shore Clamps.

WESTERN SALES & SUPPLY

4615 Washington Denver, Colorado

Gentlemen: Please send complete information and prices on E-Z Shore clamps.

We would use approximately_____pair.

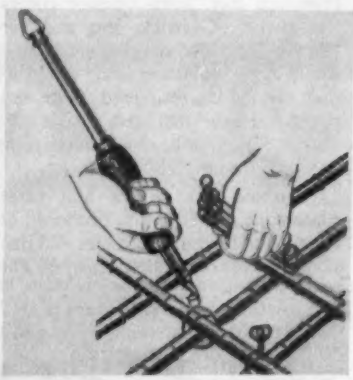
Firm Name_____

Address_____

City_____ Zone____ State_____

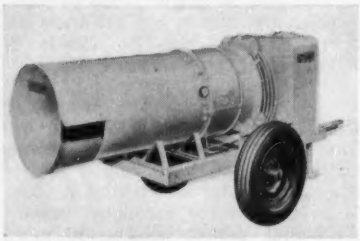
By_____ Title_____

DRILLS—Faster drilling and reduced operating costs are claimed in the new tractor-mounted rock drill, the Eeco. The unit is complete with its self-contained compressor, drill and feed, air lines and motive power. Mounted on any crawler tractor that can power a 400-cfm compressor, the Eeco has the comparative capacity of two standard 4-in. wagon drills. The unit is designed to drill in any selected direction or angle. The drill assembly consists of a 23-ft drill with a 4-in. drifter, operated with an air-feed motor, chain and sprockets. The total travel of the drifter is 20½ ft, which allows drilling a full 20 ft without changing steel. It is equipped for either dry or the new "Flotation" drilling. Features, operating methods and specifications of the Eeco are detailed in a booklet.—**Eugene Engineering Co., Box 415, Eugene, Ore.**



WIRE TIE TWISTER—A new "Rapidfire" wire tie twister that quickly ties paper, cloth, and plastic shipping bags, as well as concrete reinforcing rods, and bundles hardware items resembles a Yankee drill that works in reverse and is small enough to be slipped into a pocket. Said to sell at around $6 each.—**Montgomery & Co., Inc., 7 Tichenor Lane, Newark, N. J.**

EXTENSION BOOMS FOR GRADALL—Gradall continues to provide attachments for its versatile Gradall machines, the latest being a two-boom extension. The first attachment is a 12-ft extension which, affixed to the regular telescoping 24-ft boom of the unit, extends its working reach to 36 ft. Used only with an 8-ft blade, this extension is particularly suitable for grading and sloping operations. The second boom extension is a 4-ft unit, intended for use with digging buckets up to 24 in. With it the digging depth of a Gradall is increased from 10 to 14 ft, normal dumping height of 14 ft, 9 in. increased to more than 17 ft, and the reach of the unit lengthened from 24 to 28 ft. Both extensions are quickly mounted to the regular Gradall boom.—**The Warner & Swasey Co, 5701 Carnegie Ave, Cleveland 3, Ohio**



MOBILE HEATER—Here's a new, large mobile heater for drying concrete, cement, plastering, masonry and paint. It's a blower-type heater with axial fan and is available powered by gasoline engine or electric motor. It is capable of producing 1 to 4 million Btu per hr.—**Besler Corp., 4053 Harlan St., Emeryville, Calif.**

ROCK-RATED!

P&H MAGNETORQUE* gives highway work a new PUSH!

Friction-free swing speeds up digging cycle—
gives you 20% more output.

BIGGER PRODUCTION FOR THE BIG ROAD JOBS AHEAD!

Make no mistake — outdated designs can't compete with these modern P&H machines! This is the time to convince yourself!

Watch a Magnetorque-equipped machine go through its paces. Note the smoother, faster swing! Compare the yardage! And remember, there's no time out for pampering swing friction clutches. P&H Magnetorque does it electro-magnetically. No friction — no wear. No bothersome adjustments. Magnetorque lasts the life of your machine.

Strength? These machines are built as only P&H can build them — all welded throughout of tough, rolled alloy steels.

They're ROCK RATED . . . ready for the repeated shock loads that wear down less rugged machines.

Ask us to tell you where you can see the nearest P&H 955-A or 1055 at work.

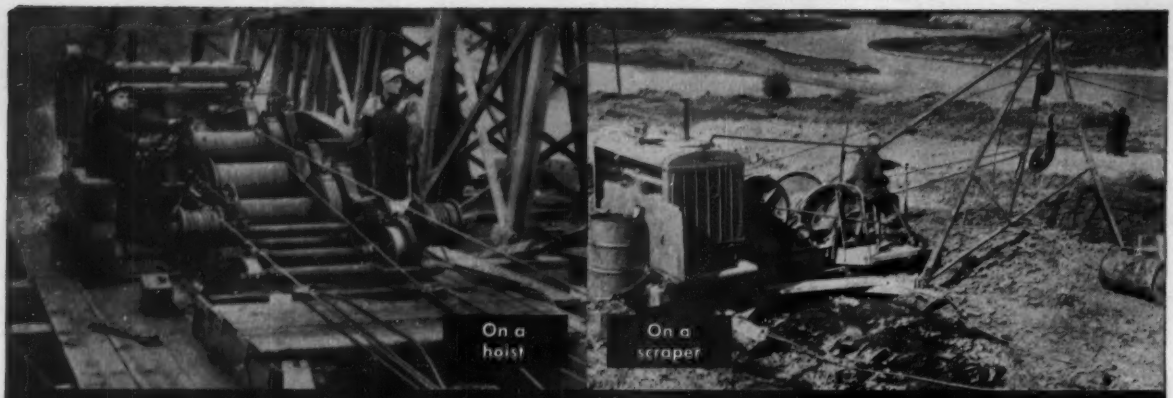
P&H POWER SHOVELS AND CRANES

HARNISCHFEGER CORPORATION MILWAUKEE 46, WISCONSIN

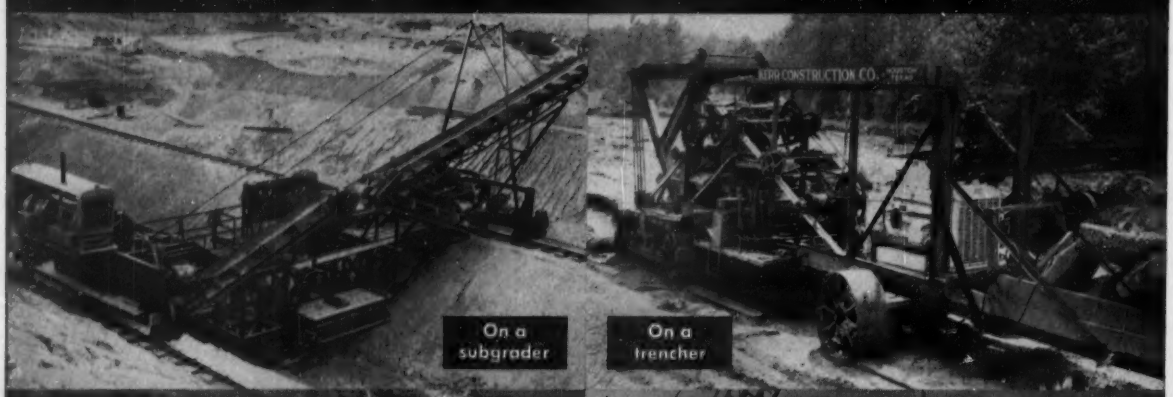
*T.M. of Harnischfeger Corporation for electro-magnetic type coupling.

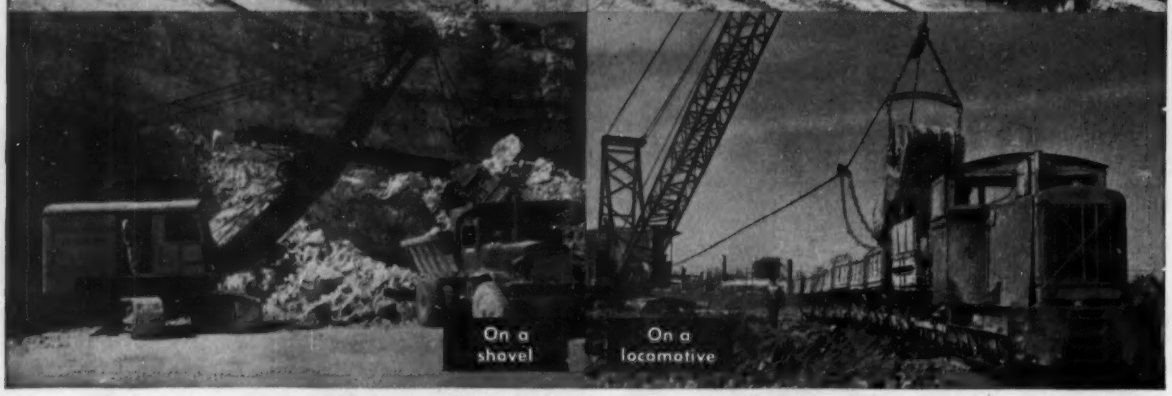
the P&H Line

TRUCK CRANES · DIESEL ENGINES · POWER SHOVELS · PRE-FABRICATED HOMES · ELECTRIC HOISTS · SOIL STABILIZERS · WELDING EQUIPMENT · OVERHEAD CRANES



You'll get the most out of your construction equipment with MURPHY DIESEL POWER





MURPHY DIESEL COMPANY

5339 W. Burnham St. Milwaukee 14, Wisconsin

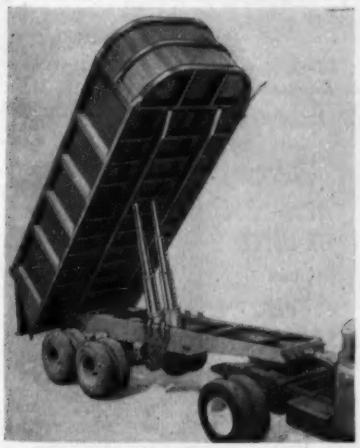
239

MURPHY DIESEL

Heavy duty power **for construction**

Murphy Diesel Engines and power units are available in sizes from 90 to 240 H.P. Engine speeds are 1200 and 1400 rpm. Also available are dual-fuel engines and altitude engines which will maintain sea level ratings up to 9000 ft. "Packaged" generating units are available with capacities ranging from 60 to 154 K.W. A.C. or D.C. voltages to suit your requirements.

STEAM CLEANER—The Spontane Steam Cleaner features Hydro-Therm Flow, a patented preheating arrangement which makes it possible to convert cold water to 80-psi steam in 45 sec. Cleaning compound is mixed by continuous agitation with the heated water dissolved thoroughly and rapidly to provide maximum detergency. The unit operates at steam pressures from 80 to 125 psi independent of city water pressure. **—Turbo Machine Co, Lansdale, Pa.**



PERFECTION HOISTS—A new line of telescopic hoists designed for 12- to 24-ft dump bodies for trailers or tandem trucks in four models include single-acting units either with twin 7- or 8-in. cylinders and 80-in. stroke, or single-acting unit 7- or 8-in. cylinders and 54-in. stroke. On trailer applications twin models are available for power fifth-wheel installation or with hydraulic pump mounted on the tractor. Quick disconnecting fittings for hose connection to the trailer are provided. The perfection hydraulic pump features an exclusive development termed "pressure pocketing," a method of applying pressure to the back of the thrust plates to keep them in sealing contact with the gear ends. This design, it is reported, reduces friction, wear and oil slippage. **Perfection Steel Body Co., Galion, Ohio**

UNI-FORM Concrete Forms GUARANTEE Material and Labor Savings on Your Concrete Jobs!

Example: This wall—24 ft. long x 12 ft. high can be UNI-FORMED for 50% less than with conventional forms.

- ONE SIDE ALIGNMENT and BRACING SAVES UP TO 50% MATERIAL and LABOR
- USE STANDARD LUMBER LENGTHS—NO CUTTING OR FITTING—GET MAXIMUM LUMBER RE-USE
- SIMPLIFIED ASSEMBLY permits inexperienced crews to form fast . . . accurately . . . no waste motion

Universal Concrete Form Specialists will assist your men On The Job TO INSURE MAXIMUM FORMING SPEED . . . EFFICIENCY . . . SAVINGS

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Write for the new UNI-FORM catalog

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FOR A MOBILE EMERGENCY RIG

WHEN machinery, trucks or tractors get mired, stuck or submerged valuable equipment is idle or endangered . . . and that costs money. With a tractor-mounted Carco winch on the job you can move to the trouble speedily. The added "reach" of the Carco winch line lets you get to the equipment to be rescued. And the rugged pulling power of the Carco winch . . . double the drawbar pull of the tractor itself . . . does the rest of the job. Carco winches are engineered for rough, tough work . . . long wearing, constant mesh gear trains transmit tractor power efficiently . . . brakes hold firm . . . concealed cable controls eliminate exposed levers and rods. See your nearest Carco dealer. PACIFIC CAR AND FOUNDRY COMPANY, Renton, Wash. Branches at Portland, Ore., and Franklin Park, Ill.

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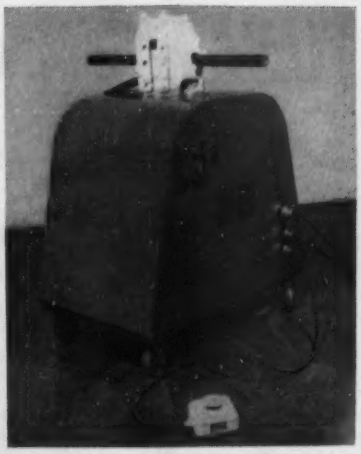
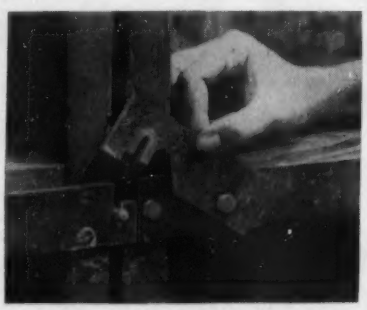
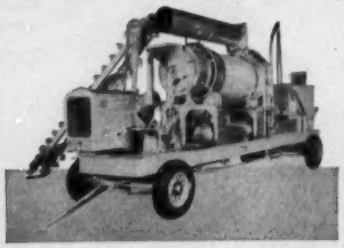
For All Industrial Tractors
CARCO®



PORTABLE SHEAR — The H-90 Guillotine Shear has been designed for cold drawing operations and is adaptable to forging bar cutoff requirements. The 90-ton shear weighs only 950 lb. A square cut is obtained on all types of steel bar up to 1½ in. round. Operation is electric hydraulic, with cutoff time 2 sec. A complete cycle is performed by touch of hand or foot switch. Automatic cycling is possible. The over-all height is 48 in., and it is ideal for placing in a conveyor line without the problem of overhead space limitations.—**Manco Mfg. Co., Bradley, Ill.**



CONCRETE HARDWARE — New, simplified, interlocking hardware permits contractors to save from one-third to one-half of concrete form costs. Part of the system is a newly designed patented, interlocking hardware which is mounted directly to 2x8- or 4x8-ft forms. On the job, forms are placed in approximate positions they will occupy, saving on handling time and effort. There is no loose hardware to worry about, and walers are unnecessary. Both inner and outer forms are set up simultaneously and lined up accurately, as each form section is locked into place. Locks draw forms closely together, minimizing ridges on the finished wall. Stripping time is decreased as forms are quickly unlocked. The hardware is case hardened steel, the bars, levers and screws are guaranteed to withstand high-pressure concrete.—**Simplex Forms System, Inc., Loves Park, Ill.**



ASPHALT PLANTS

Complete units for maintenance and moderate contract paving. Sizes—4, 8, 15, 30 tons per hour.

Other Products

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Gasoline Engine and Electric Motor Driven Models

HEATING KETTLES
for Asphalt and Tar

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for Stone and Sand

FRONT END LOADERS
for Industrial Tractors

White Mfg. Co.

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ELKHART 6 **INDIANA**

MAYO PNEUMATIC GROUTER and "PEA SHOOTER"

Simple to Operate Highly Efficient

The Mayo Grouter quickly and easily places low-pressure grout in tunnels, mines, shafts, foundations, and subgrades. It also may be used to inject sodium silicate emulsions for stabilizing caving or running ground.

This versatile piece of equipment can readily be converted to a "Pea Shooter" for shooting Pea or "Bird's Eye" gravel back of liner plates and backpacking outside lagging plates.

Write for Free Catalog 13 for full details and specifications.

MAYO

TUNNEL AND MINE EQUIPMENT
LANCASTER, PENNA.

Laying the hot-mix Texaco Asphaltic Concrete wearing surface, final step in this New York State highway project. Prime contractor—Tuckahoe Construction Co., Tuckahoe, N.Y.; Asphalt contractor—County Asphalt, Inc., Tarrytown, N.Y.

New York made this an all-flexible highway

Applying an 85/100 penetration Texaco asphalt to the top 4 inches of the 12-inch broken stone base.

A section of the new 22-foot pavement, which will have a 10-foot shoulder on each side when completed.

West of Liberty, N. Y., State Route 52 serves one of New York State's most popular resort areas. Last year, when the Department of Public Works built a new 7-mile link in this highway, it employed flexible construction from top to bottom.

For the sub-base, run-of-bank gravel was laid in two lifts to a compacted thickness of 12 inches. This was covered by three 4-inch courses of broken stone, the top course penetrated by an application of two gallons of 85/100 penetration Texaco asphalt per square yard. A two-course hot-mix Texaco Asphaltic Concrete pavement, with a combined thickness of 3 inches, completed the highway.

The all-flexible type of construction used on New York's Route 52 merits serious consideration for all toll roads, important highways and other heavily traveled thoroughfares. It is capable of absorbing punishing impact for years with a minimum of maintenance. Its first cost and upkeep cost are lower than for comparable pavements. Its easy-riding, skid-resistant qualities, as well as its freedom from glare and absence of joints all contribute to maximum driving comfort and safety.

Helpful information on all types of Texaco asphalt construction for streets and highways is supplied in two booklets, which our nearest office will be glad to send you.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

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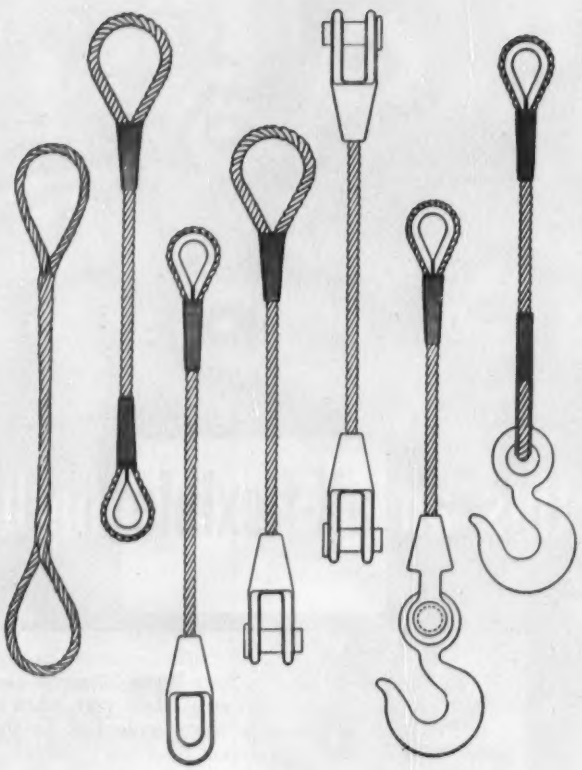
TEXACO

TEXACO ASPHALT

UPSON-WALTON

wire rope slings



engineered for safety

UPSON-WALTON'S long experience in the manufacture of wire rope and rope fittings pays off when it comes to slings. Factory assembled by skilled craftsmen, Upson-Walton slings are tops in strength and safety.

Upson-Walton slings are sold through selected distributors everywhere to assure you of quick delivery and a wide choice of associated fittings. Catalog on request.

THE UPSON-WALTON COMPANY

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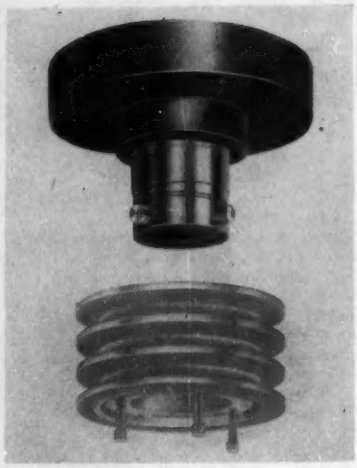
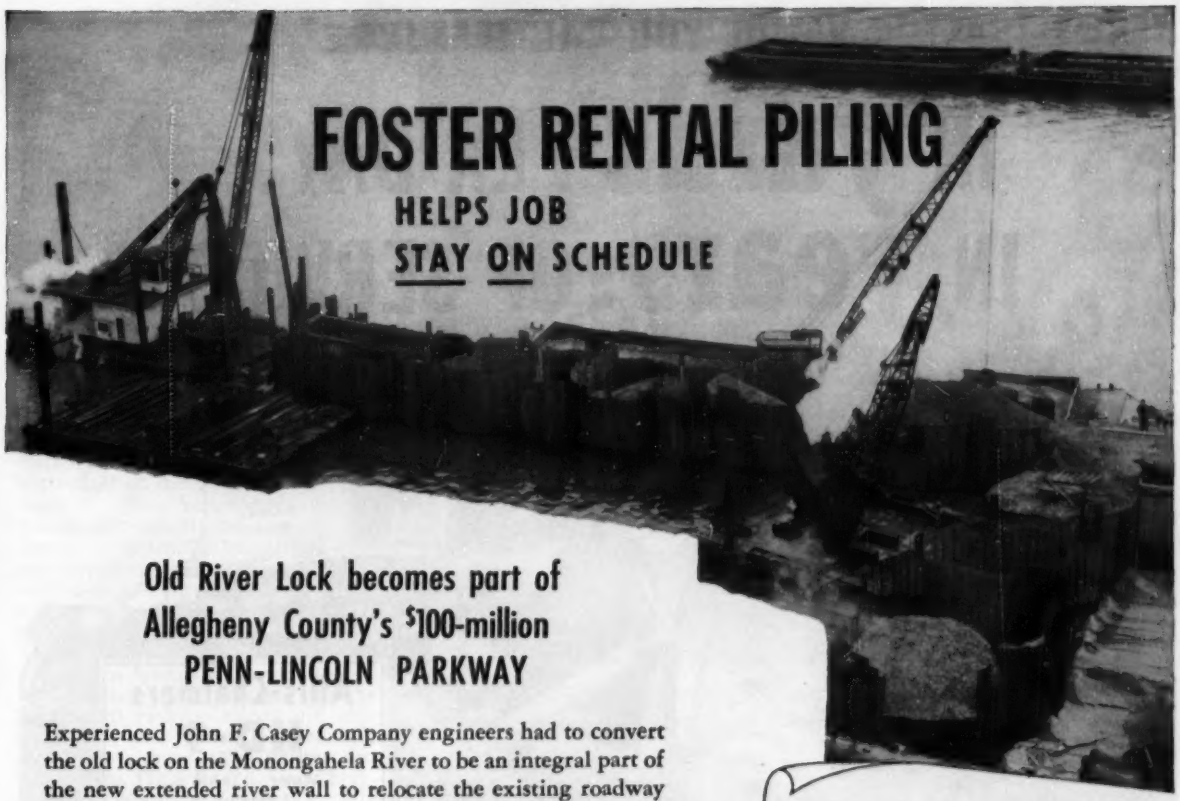
MANUFACTURERS OF WIRE ROPE, FITTINGS, TACKLE BLOCKS — ESTABLISHED 1871



AUTOMATIC CLUTCH—A new, low cost automatic clutch for gasoline engines and electric motors is now being marketed. Designed for use on gasoline engines from 3 to 10 hp with 1⅛-in. dia shaft extensions, and on electric motors from 2 to 5 hp, 1,700 rpm, this 600 Series clutch is light in weight and compact. It can be installed without altering present shaft extensions. It is claimed it will pick up the load smoothly and positively when the engine is accelerated. A wide selection of detachable sheaves or sprockets is available for use on the unit.—**The Salsbury Corp., 1161 E. Florence Ave, Los Angeles, Calif.**

EAR PROTECTORS—The "Straightaway" muff-type sound protectors give excellent protection against both high and low frequency noise, and are safe, sanitary and comfortable to wear. They require no special fitting. Three styles are available: Medium weight cotton helmet; lightweight cool nylon-mesh helmet; and the headband type. Helmets are designed for use with safety glasses and hard hats. Headband type permits use of safety glasses. The helmets come in 3 colors. These protectors are offered on a "trial-on-the-job basis." They carry a full year repair guarantee against damage resulting from normal occupational use. Literature and prices are available from the **David Clark Co., Inc., Worcester, Mass.**



FOSTER RENTAL PILING

HELPS JOB STAY ON SCHEDULE

Old River Lock becomes part of Allegheny County's $100-million PENN-LINCOLN PARKWAY

Experienced John F. Casey Company engineers had to convert the old lock on the Monongahela River to be an integral part of the new extended river wall to relocate the existing roadway and accommodate the new Penn-Lincoln Parkway. Casey engineers drove cellular cofferdams averaging 23'9" in diameter to keep water seepage to the minimum on this tremendous engineering project. Their careful planning insured an efficient, uninterrupted work schedule in constructing the river wall, and an important part of the schedule depended on Rental steel-sheet Piling from Foster. Foster delivered ahead of schedule, in the exact sections (MP-112) and in the specified lengths.

On your next Piling job, call Foster for the exact sections, in the exact lengths . . . on the job when you need it, and at Foster's standard low rental rates that allow considerable saving.

NEW PILING CATALOG
Just Released!

Describes steel-sheet Piling Sections and construction data. Ask your nearest Foster office for Catalog CM-5.

JOHN F. CASEY COMPANY
CONTRACTORS

L. B. FOSTER COMPANY
P. O. Box 1647
Pittsburgh 30, Pa.

Gentlemen:

On many of our construction jobs, we have always found we can depend on L. B. Foster to supply our piling requirements promptly, and to our exact specifications. We know that having the right sections and proper lengths of steel-sheet piling, when they were needed, contributed greatly to the successful completion of our contract on the Penn-Lincoln Parkway job.

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RAILS • SWITCH MATERIAL
TRACK ACCESSORIES, TOOLS
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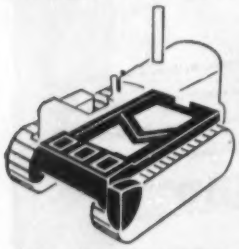
YOU SAVE WHEN YOU RENT STEEL-SHEET PILING FROM FOSTER

HERE'S TRACTOR VALUE YOU CAN MEASURE

IN yards PER DAY... IN years OF SERVICE

The Allis-Chalmers HD-9 Tractor offers performance reliability and ease of servicing that pays off in year-after-year efficiency. Here's what we mean:



BUILT TO STAND THE GAFF OF DAILY USE FOR YEARS...

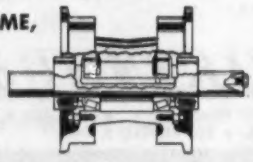
One-piece, welded main frame forms a continuous, strong backbone that means longer life for each tractor.

Oil-enclosed track release mechanism keeps adjustment at required setting and reduces track maintenance and breakage.

Smooth, efficient power train gives extra life, greater ability to absorb the punishment of tough jobs for every gear, shaft and bearing in the tractor.

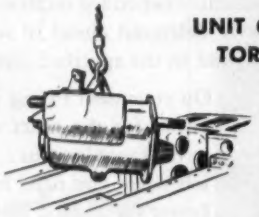
A-type truck frames permit free track oscillation and eliminate twists and strains caused by rough terrain.

EASIER LUBRICATION SAVES TIME, HELPS PROTECT EQUIPMENT



Lubrication period of 1,000 hours for final drives, truck wheels, idlers and support rollers saves both grease and time. Spring-loaded, Positive Seals keep grease in, keep dust and water out.

Fewer, more accessible lubrication points make short work of a chore. No lube points at all under tractor.



UNIT CONSTRUCTION PUTS TRACTORS BACK TO WORK SOONER

Transmission can be removed as a unit without removing clutch, final drive or bevel gear.

Engine can be removed without disassembling clutch.

Truck frame can be dismantled without removing final drive, sprocket or equalizer spring.

Clutch assembly can be removed without disturbing engine or transmission.

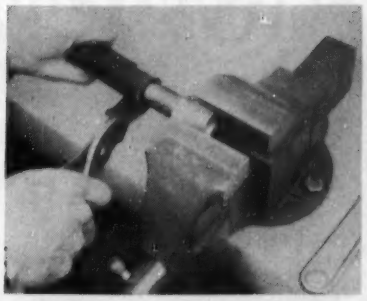
Final drive gear and intermediate gear can be removed without disturbing steering clutch.

Each steering clutch can be removed independently without disturbing final drive or bevel gear.

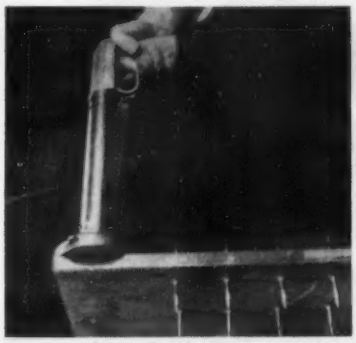
• • •

Let your distributor tell you more about the rugged construction, ease of servicing and outstanding performance ability of the Allis-Chalmers HD-9 Tractor. It's a story that adds up to value you can measure in yards per day and in years of service.

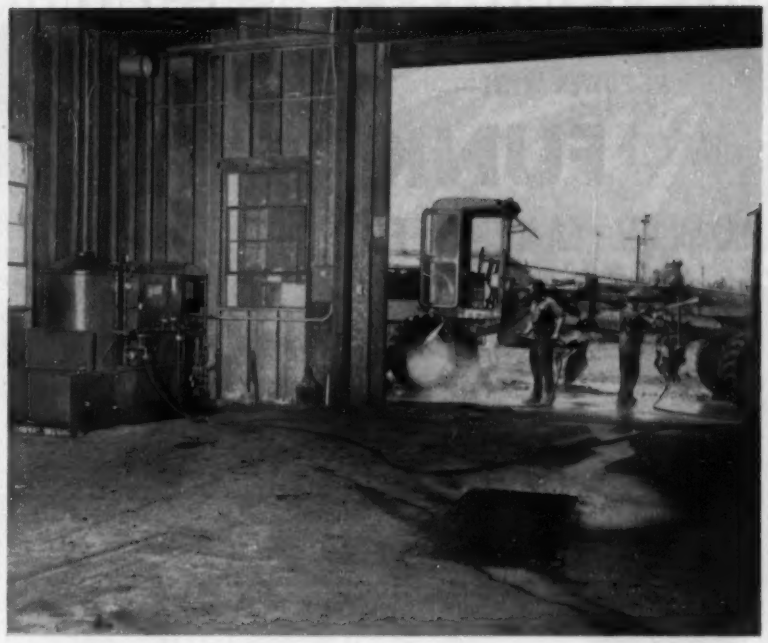
ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.



REUSABLE-TYPE HOSE FITTINGS—Thirteen additional sizes of reusable-type Hoze-lok fittings are now available. The additions eliminate the need for reducers in many combination size connections when diameter reduction from hose to tubing is desired. The reusability feature means convenient and rapid installation of hydraulic hose lines, ease and simplicity of assembly providing on-the-spot repairs, and lower maintenance costs. The Parker line of hose fittings for low, medium and high-pressure installations include swivel nut fittings, male pipe thread fittings, flare nose fittings, and the component sockets, swivel nut nipples, male pipe thread nipples, and flare nose nipples.—**The Parker Appliance Co, 17325 Euclid Ave, Cleveland 12, Ohio**



POWDER - ACTUATED TOOL — Ramset recently announced what they claim is the world's first powder-actuated tool designed to drive heavy shank fasteners successfully into structural steel plates up to 1 in. thick and into hardest concrete. They call it the Super-Power Jobmaster. The pins and studs driven into 1-in. structural steel with the new tool have a holding power up to 10,000 lb, approximately 25% greater than recorded for fasteners seated by any other heavy-duty tool, according to tests made by Ramset engineers. The new tool weighs less than 8 lb, and is a mere 15 in. long. It is designed for either one-hand or two-hand operation and sets pins and studs three-eighths of an inch in thread for head diameter at an average rate of one or more a minute.—**Ramset Div., Olin Industries, Inc., 12117 Berea Rd, Cleveland, Ohio**



MALSBARY 322 steam cleaner, with two guns in use simultaneously, blasts grease, road oil and mud from Caterpillar No. 12 Grader in a hurry.

What Size Steam Cleaner Should You Use?

L. G. Defelice & Son, Inc., nationally-known contractor keeps his MALSBARY 322 HPC cleaner busy 10 hours daily, 6 days a week, maintaining this fleet in work trim:

30 D8's	12 DW20's
8 DW21's	4 Northwest shovels
70 trucks	15 compressors

If you have a large fleet like this, heavy, sticky road tars, thick mud and greasy dirt, enough cleaning to keep one man or more busy full time, then you need a MALSBARY HPC cleaner. HPC (patented) = high pressures to 400 lbs. combined with either hot solution to 325° F., cold water, or steam.

If your work calls for intermittent cleaning, or only two to three hours cleaning at a time, chances are a MALSBARY steam vapor cleaner will handle your job very well.

Why HPC Cleans Better, Faster

MALSBARY HPC cleaners use pumps instead of steam for pressure. They can produce: (1) cold water to 400 lbs. for fast removal of caked dirt and mud; (2) hot solution at 325° F. and 150-250 lbs. for cleaning away grease and road oils; (3) hot water at 250-325 lbs. to de-ice equipment or soften caked mud; (4) warm water for hand washing trucks, tractors, etc.; (5) wet steam for degassing tanks and for heating use. Models 300 and 500 operate two or more guns simultaneously, one delivering high-pressure cold water, the other high-pressure hot solution—a real time saver on big rigs and fleets.

Ask for Demonstration

Ask your MALSBARY jobber NOW to recommend and demonstrate the right size cleaner for your job... or write TODAY for Catalog 150-R, which describes the entire MALSBARY line. 53

MALSBARY MANUFACTURING CO.

Room C5, 845 92nd Avenue Oakland 3, Calif.

FOR LONG-LIFE ECONOMY
RE-POWER WITH—

FUNK
POWER TAKE-OFFS
AND
GEAR REDUCTION POWER TAKE-OFFS

OTHER FUNK ITEMS:
Right Angle Take-Offs.
Front End Take-Offs.
Jack Shaft Extensions.

Ford Tractor Conversion Kit adapts 6 or V-8 engine, doubles power.

Special gear reduction with two shafts, one turning same speed and rotation as engine, the other anti-enginewise at optional reduction.

. . . are available with over-center clutches for all engines with SAE flywheel housings. Gear reduction units feature exclusive straddle mounted pinions; special ratios and special adaptions of standard units. Wide selection of standard types, sizes and ratios stocked for immediate shipment.

WRITE FOR CATALOG!
—our engineers will be glad to assist with your power problems.

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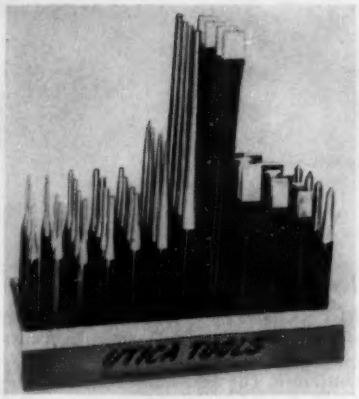
FUNK AIRCRAFT CO.
3303 Airport Drive Coffeyville, Kan.

JACKSON BARROWS

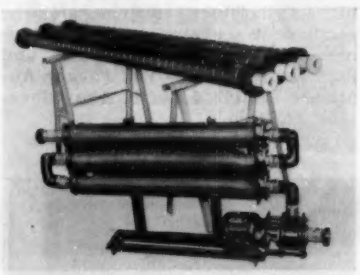
The superior design and construction of the Jackson line of heavy duty wheelbarrows stand out under the grueling test of construction conditions. Jackson, first choice of contractors, features built-in durability such as double-folded corners; seamless, press-formed trays; lifetime, oil-impregnated, powdered-metal bearings. To take advantages of lower price, longer wear, better performance . . . buy Jackson!

Jackson MANUFACTURING COMPANY
HARRISBURG, PENNA.

Oldest and largest wheelbarrow maker in America



FORGED HAND TOOLS—A new Utica line of bit extensions, counter sinks, nail sets, star drills, cold chisels, wood chisels, punches, driver bits and pinch bars and screwdrivers is now available. They are especially designed for high quality work in the metal-working and woodworking fields.—**Utica Drop Forge & Tool Corp., Utica 4, N. Y.**

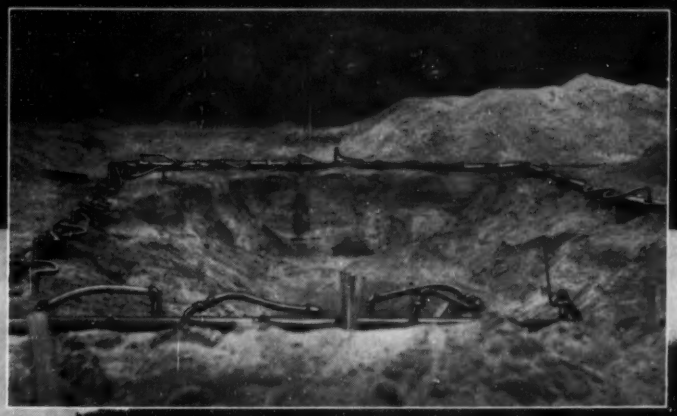


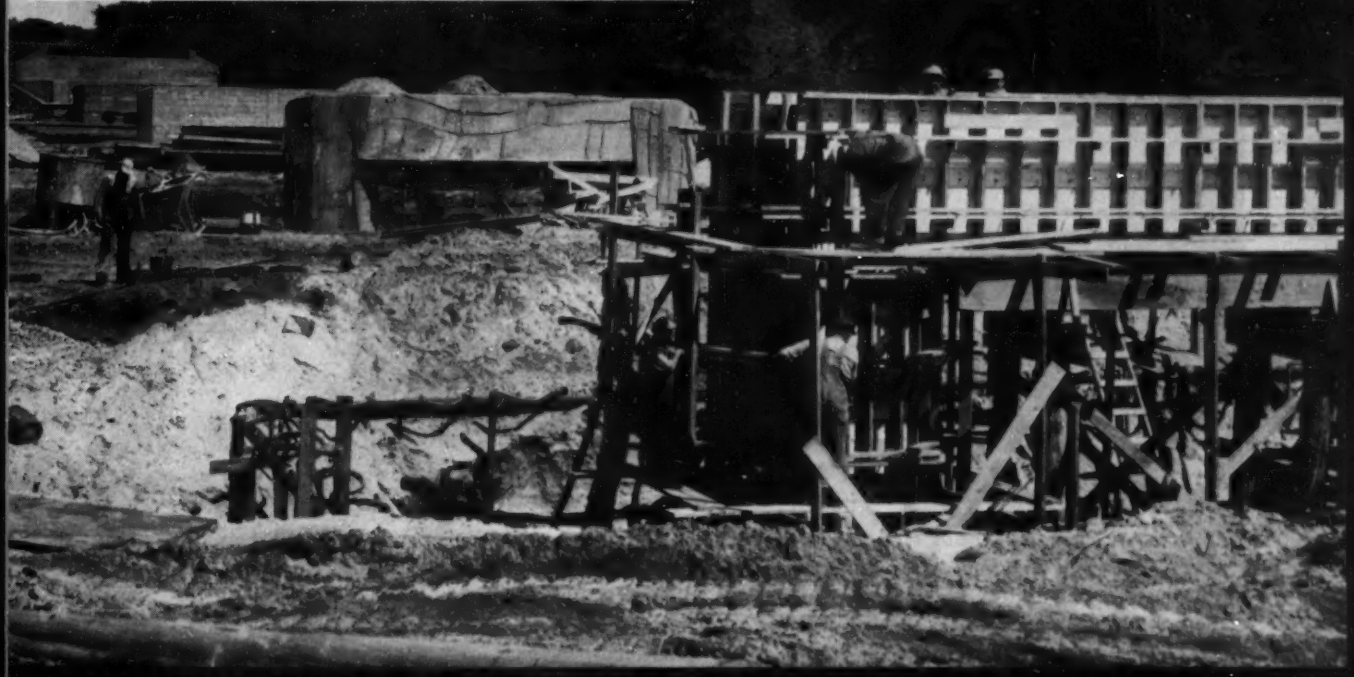
HEAT EXCHANGER—The Camac Tantalum heat exchanger is a new line of simple and efficient design using such materials as Tantalum, Stainless, Karbate and black iron in the exchanger tubes. The design is unusual in that plane-end 1¾-in. ID, 9-ft long, .020-in. tantalum tubes are used. These units are suitable for many other acid heat exchanger applications.—**Carl Buck & Assoc., Essex Fells, N. J.**

PORTABLE TRAILER ALL-STEEL TOOL BOX—A tamperproof, ruggedly built fast trailing pneumatic-tired all-steel tool box which meets the needs of the average general contractor features rigid telescoping sturdy stand legs at each end. Its 6-ft box has an over-all length of 114½ in., including tow frame, an over-all height of 49 in., and a loading height of 41 in. Load capacity is 2,000 lb. One padlock protects the entire box. In locking the handle pull the covers in tight, where they lock under the box rim. It is impossible to open either cover unless locking handles are released. The tow eye can be placed at any height from 24 to 38 in. to accommodate various towing trucks.—**Aeroil Products Co., Inc., 69 Wesley St., S. Hackensack, N. J.**

SUBSTANTIAL SAVING-EARLY COMPLETION

with Stang WELLPOINTS





BRIDGE APPROACH PIERS, BLACK RIVER BRIDGE NEAR ONALASKA, WISCONSIN, FOR THE NEW MISSISSIPPI VALLEY SCENIC HIGHWAY, STATE OF WISCONSIN HIGHWAY DEPARTMENT

The saturated soil material on the jobsite was stabilized and predrained by installing a wellpoint system around the perimeter of the pier sites, as shown in the upper photo. A completed pier can be seen in the background and the second pier being formed is shown in the foreground with the wellpoint system in operation during construction.

YOU TOO can realize SUBSTANTIAL SAVING and EARLY COMPLETION on your WET WORK — consult us for FREE ESTIMATE.

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Engineers and Manufacturers of Unwatering Equipment

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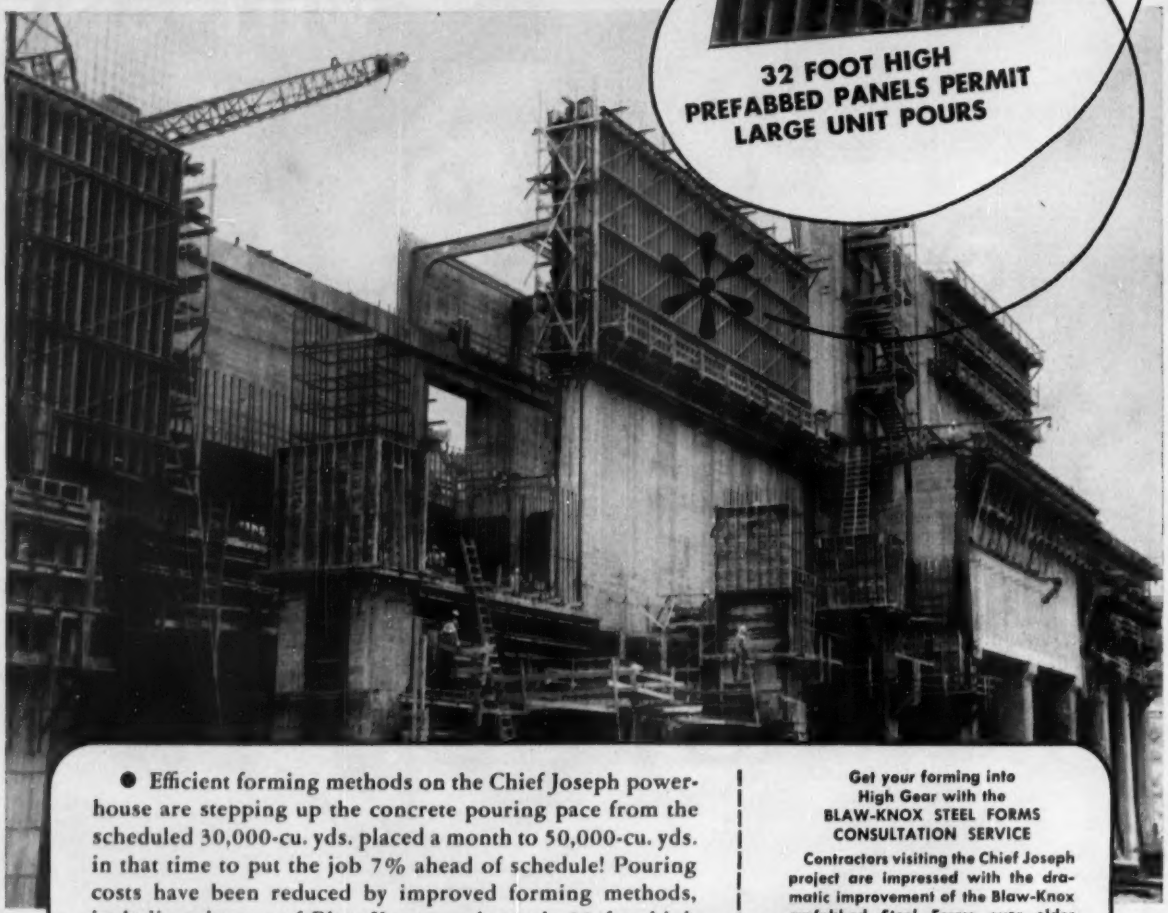
BLAW-KNOX STEEL FORMS

CUT FORMING COSTS ON THE WORLD'S BIGGEST POWERHOUSE AT CHIEF JOSEPH DAM

32 FOOT HIGH PREFABBED PANELS PERMIT LARGE UNIT POURS



● Efficient forming methods on the Chief Joseph powerhouse are stepping up the concrete pouring pace from the scheduled 30,000-cu. yds. placed a month to 50,000-cu. yds. in that time to put the job 7% ahead of schedule! Pouring costs have been reduced by improved forming methods, including the use of Blaw-Knox steel panels 32 feet high which permit pours up to 70-ft. long in some of the massive solid walls. By re-using these forms, 80% of the concrete will be formed against the prefabbed panels.

Mass pours in the intake structure are made with Blaw-Knox Cantilever Steel Forms which permit 5-ft. lifts. Many of the big single and double-story galleries are formed with Blaw-Knox Traveling Steel Forms.

Get your forming into High Gear with the BLAW-KNOX STEEL FORMS CONSULTATION SERVICE

Contractors visiting the Chief Joseph project are impressed with the dramatic improvement of the Blaw-Knox prefabbed Steel Forms over older methods in such intricate places as draft tubes. This is another reason why it will pay you to call in Blaw-Knox engineers in the preliminary planning stages . . . to lick such difficult forming problems *before* they're on the drafting board! Whatever your job . . . dams, tunnels, bridges, sewers . . . take advantage of the Blaw-Knox Steel Forms Consultation Service. There's no obligation, so write, wire or phone Blaw-Knox today.

BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
PITTSBURGH 38, PA.
Offices in Principal Cities

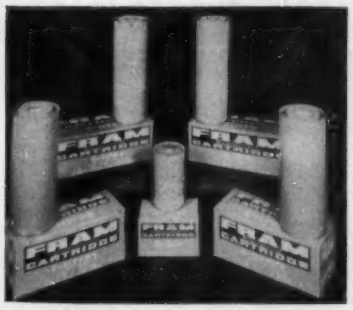
BLAW-KNOX

STEEL FORMS

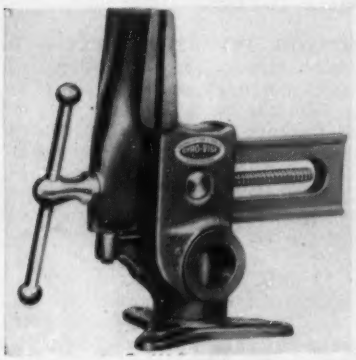
WRITE FOR BULLETIN 2430

It contains special design suggestions and complete details about Blaw-Knox Steel Forms and the consultation service that is available to any contractor without obligation.

CONSULTATION SERVICE BY BLAW-KNOX



REPLACEMENT CARTRIDGES — Five new lube and fuel oil cartridges have been announced by Fram. Included in the addition are the C-235, a lube oil cartridge for International Harvester, secondary fuel cartridge for Allis-Chalmers HD15 and HD19, and C-1179PB, secondary fuel cartridge for AC HD20. Also added are cartridges for primary fuel and lube oil for AC HD15 and HD19, and AC HD20. Fram manufactures more than 100 various types of replacement cartridges in meeting the demand for Fram filter-equipped gasoline and diesel engines throughout the world. **—Fram Corp., Providence, R. I.**

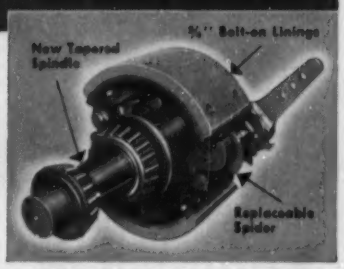


ALL-PURPOSE VISE—A new all-purpose vise said to work equally well in any upright or on-its-side position is the Columbian Gyro-Vise No. 72½. It operates from and rotates around a standard base which can be mounted in any desired location. It locks automatically in any selected position. Gyro-Vise jaws are 2½ in. wide and 4½ in. deep. Maximum jaw opening is 5 in. Overall height is 10½ in., and weight is 16 lb. Manufactured by the **Columbian Vise & Mfg. Co., Cleveland, Ohio.**

RUST BUSTING TOOL—A new aerosol pressurized can of Kroil, a chemical solvent, used to penetrate into spaces as small as one millionth of an inch, will soften rust, dissolve dried grease and oil, and the manufacturer claims, will loosen any bolts, bearings, bushings, or rusted frozen parts.—**Kano Laboratories, 1000 S. Thompson Lane, Nashville 11, Tenn.**

LaCROSSE COSTS LESS ...gives you MORE!

Why *increase* your costs for trailer transportation, when you can get famous LaCrosse dependability at *savings of 5% to 25%* over other leading low beds! And look at all the EXTRA ADVANTAGES you gain with LaCrosse! *Up to 2000 lbs. more PAYLOAD capacity per trailer!* Bigger, more dependable brakes! Stronger "one-piece" gooseneck! New hi-strength tapered spindles, with *replaceable brake spiders!* All this — PLUS new lighter weight spoke wheels, more durable lengthwise decking. Call or write for complete money-saving facts today.



Biggest, Safest Brakes in the industry!

Husky 12¼" x 6" LaCrosse design, with constant rise S-cam and worm gear slack adjusters, insures cooler running, quicker stops — without slipping or grabbing. Equipped with tough ⅝" bolt-on linings which last up to 45% longer than other types — *plus* an exclusive new bolt-on spider which is easily replaced without removing axle assembly.

LC-29

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LaCROSSE TRAILER CORPORATION, LaCrosse, Wis.

☐ Rush complete information on LaCrosse trailers:
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☐ Send name of nearest LaCrosse Distributor.
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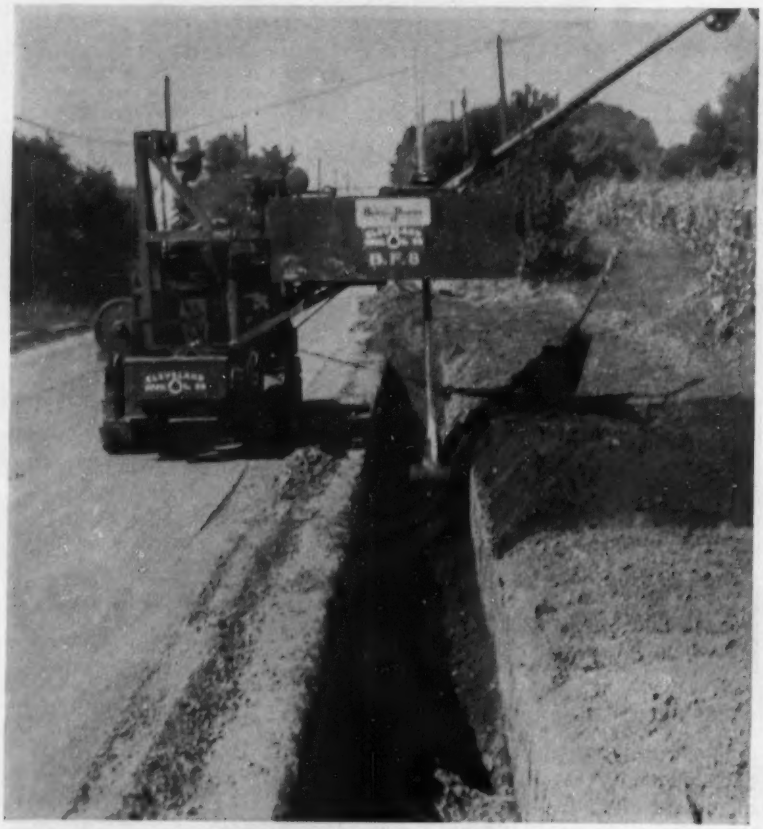
America's Favorite **LOW-BED TRAILER**



Keeps 4 Backfillers Busy

IN OMAHA, NEBRASKA, the Metropolitan Utilities District keeps 4 CLEVELAND Backfillers busy on construction jobs for gas, sewer and water lines.

The photograph shows how easily the Model 80 Backfiller is operated by only one man. It also shows how the 80, traveling parallel to the trench as it works, holds to an absolute minimum any interference with the highway's normal traffic capacity.

The 80 is not only cleanly filling this good sized trench, it is also compacting it simultaneously with its tamper unit, a standard accessory feature of this versatile machine. The results it is obtaining clearly illustrate its ability to backfill fast and efficiently and at the same time do an outstanding job of compacting the fill. Traveling continuously as it performs both these operations, it conserves on manpower and eliminates the need for attendant equipment.

In addition to backfilling and compaction these Model 80's do side crane work of all kinds, such as the handling and installation of cast iron, steel and concrete pipe, valves, etc.

The repeated purchases of these machines by this municipal utilities body are evidence of the Model 80's ability to deliver consistently satisfactory results through consistent, outstanding performance on a wide variety of job types and sizes.

Write for descriptive literature and specifications, or get the full story on CLEVELANDS from your local distributor.

THE CLEVELAND TRENCHER CO.

"Pioneer of the Modern Trencher"

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New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

MOVIE—Here's a new color sound movie titled "The Big Lift" which runs 29 min and tells a dramatic story about the importance of the excavating equipment industry in general and Lima shovels, cranes and draglines in particular. The movie contains good continuity and narration woven into a father and son plot. It is being distributed through Lima distributor organizations and is available by writing to **Baldwin-Lima-Hamilton Corp., Lima, Ohio**

HOE APPLICATIONS—Large illustrations, featuring all sizes of Lorain hoes, highlights a new 15-p picture booklet recently published by Thew. It covers the entire Lorain line and uses job photos to illustrate hoe applications. The book is available on request from any Thew-Lorain distributor or directly from the **Thew Shovel Co., Lorain, Ohio**

SUBSOIL INVESTIGATIONS — If you're interested in soil testing, you can obtain an excellent booklet of 24 pp which tells the complete story of sub-soil investigation, the procedures, testing, research and engineering consultation. This booklet may be obtained by writing the **Soil Testing Services, Inc., 3521 N. Cicero Ave., Chicago 41, Ill.**

ELECTRIC VIBRATOR—A new 4-p illustrated catalog announcing a new line of electric vibrators contains factual and technical data on Model RC Cleveland and the Model MC which will handle any granular material in an almost noiseless operation with extremely heavy impact for its weight. They are available in 3-phase ac current only and in voltages from 110 to 500. They are designed for light-duty applications. Ask for Catalog No. 10.—**Cleveland Vibrator Co., 2828 Clinton Ave., Cleveland, Ohio**

THE ALLIS CHALMERS LINE—The complete A-C industrial equipment line is pictorially described in a new 36-p catalog just released by **Allis-Chalmers Mfg. Co., Milwaukee, Wis.**

TAUTLINE CABLEWAYS—Sixteen pages of photographs, sketches and text describe types, spans, working loads and other details of tautline cables in a new 3-color catalog that should be of interest to construction and consulting engineers and industrial concerns. You can get a copy by writing **Dept. C-30, Sauerman Bros., Inc., 522 S. Clinton St., Chicago 7, Ill.**

WHY IT PAYS TO BUY STEEL FROM WAREHOUSE

You don't need to freeze money in inventory!

WHEN YOU BUY STEEL FROM WAREHOUSE, YOU GET:

- LOWER INVENTORY COSTS
- LOWER SPACE COSTS
- LOWER TIME COSTS
- LOWER CAPITAL INVESTMENT
- FASTER PRODUCTION
- FEWER INVENTORY LOSSES

LET your U. S. Steel Supply warehouse serve as your inventory stock. Then you eliminate from your overhead the cost of carrying your own inventory, and free a substantial portion of your capital for other purposes. U. S. Steel Supply can always deliver the steel you want to your plant or job site at the time you specify. Just tell your U. S. Steel Supply salesman what you want . . . when . . . and where.

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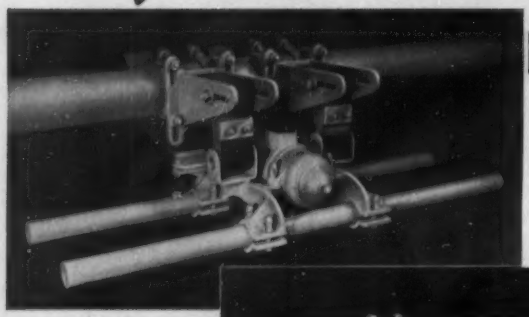
Warehouses and Sales Offices
Coast to Coast

UNITED STATES STEEL

SURFACE and INTERNAL VIBRATION
for CONCRETE PAVING

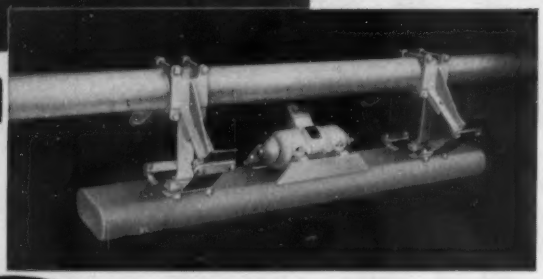


INTERNAL TYPE

Tubes vibrate deep in concrete. One unit, as shown, for each 5'-0" (maximum) of slab width. Usually attached to front of finisher.

SURFACE TYPE

Tube vibrates on surface. Accomplishes thorough densification of 10" concrete slabs. One unit, as shown, for each 6'-0" (maximum) of slab width. Usually attached to rear of spreader.



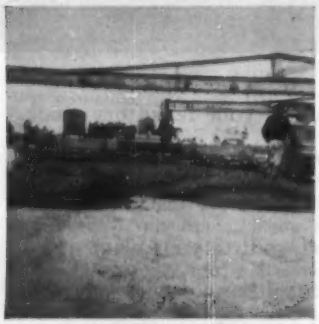
JACKSON GIVES YOU BOTH!

A 25', 5-motor Tube of the internal type quickly plasticizing a tough mix on thick slab construction.

The contractor who owns a Jackson Paving Tube can quickly switch from INTERNAL to SURFACE vibration, or vice versa, and meet any concrete slab specifications — at a minimum of equipment investment.

Supplied with extraordinarily powerful motors, the JACKSON INTERNAL Paving Tube will thoroughly vibrate all concrete slabs as thick as 24" and as wide as 25', quickly plasticizing the very dry, harsh mixes. Attached to a standard finisher, its use materially reduces spreading labor where no spreader is used. Adapted to SURFACE vibratory operation, it will do a perfect job of vibrating any mix in depths up to 12". Powered by a Jackson Portable Power Plant mounted on parent equipment and controlled by its operator.

For better results and lowest possible costs buy a JACKSON Vibratory Paving Tube. See your Jackson distributor or write for complete details.



On this job, on which no spreader was used, the Paving Tube materially reduced the cost of spreading concrete.

In this view note the highly plastic condition of the concrete accomplished by the surface type Paving Tube towed by the spreader.

JACKSON VIBRATORS, INC.
LUDINGTON MICHIGAN

CHAIN HOISTS—A bulletin covering the full line of recently announced P&H chain hoists is now available. It mentions all types of P & H hoists from ¼- up to 25-ton capacity and includes descriptions, as well as condensed specifications. For a copy of this bulletin, ask for H-32. **—Harnischfeger Corp. Hoist Div., 4400 W. National Ave, Milwaukee 46, Wis.**

SCAFFOLDING—Pictures and text on how Trouble Saver Sectional Scaffolding is used by contractors for bricklaying, plastering, shoring, rolling scaffolds and for hoisting towers is contained in a new 4-p guide to modern steel and aluminum scaffolds just published. Ask for Bulletin G-206R. **The Patent Scaffolding Co., Long Island City, N. Y.**

DIAPHRAGM PUMPS—Modern automotive-type design is being employed to reduce bulk and weight in a new line of diaphragm pumps which are now available for contractors and industry. These pumps are available in the 2-, 3- and 4-in. sizes, and are powered with air-cooled gasoline engines or electric motors. All sizes are available with wheelbarrow, two-wheel or base mounting. This 4-p bulletin can be obtained by writing the **Rice Pump & Machine Co, Belgium, Wis.**

MOVIE—Now available for showing is a new 16-mm sound color movie featuring the "Hystaway" excavator crane attachment for Caterpillar tractors. The movie shows the unit in actual operation in many different types of applications. Featured is the quick change from shovel to backhoe, clamshell, crane, pile-driver and bulldozer. Arrangements to book this movie, called "Design For Excavating," may be made at any Caterpillar-Hyster dealer, or by writing directly to **Hyster Co., 2962 N.E. Clackamas St., Portland 8, Ore.**

BRIDGE ELECTRIFICATION — A new 12-p booklet (Form GED-1892) on movable-bridge electrification explains why the nation's automobile and railroad traffic growth necessitates new movable bridges. It is amply illustrated and contains case histories of various bridge applications. Information on amplidyne-control, electrically operated center-span drives and interlocked control also is provided.**—General Electric Co., Schenectady 5, N. Y.**

CATERPILLAR — "Your Job, Your Equipment and Caterpillar Service" is the title of a new 8-p booklet recently released by Caterpillar which describes service facilities of dealers and shows services in photographic form. The new booklet, Form D-410, is available from any Caterpillar dealer or from **Caterpillar Tractor Co., Peoria, Ill.**

GEORGE M. BREWSTER & SON, Inc.

uses GYRO-FLO 600's

to help move 900,000 yards of rock

These four 600 cfm Gyro-Flo portables supply air power for operating up to eleven I-R wagon drills on this job. Air from the receiver is piped 700 to 800 feet to the drilling site through a 6" line. In left foreground is an I-R air powered Jackbit grinder.

Big job in a hurry. That's the fabulous N. Y. Thruway —a non-stop, high-speed highway from New York City to Buffalo, scheduled for completion in 1954.

To George M. Brewster & Son, Inc., sub-contractor for all rock work on the 7½ mile stretch from Kingston to Whiteport, goes the job of excavating an estimated 900,000 cubic yards of rock in record time. And this project is already well under way—with the help of Gyro-Flo portable compressors and I-R rock drill equipment.

The Gyro-Flo rotary sliding-vane compressor speeds drilling operations by delivering an abundant supply of air, at constant pressure, with the most dependable, trouble-free performance ever obtainable in a portable unit. That's because the Gyro-Flo has no valves, pistons, rings, rods or clutches to wear out, adjust or replace. It delivers oil-free air at temperatures that never exceed 200° F. And pressure is controlled closely and smoothly all the way from 0 to 100% capacity.

Now available in 125, 210, 315 and 600 cfm sizes, Gyro-Flo portables offer a new high in air power efficiency for practically any job. For the complete story, contact your nearest Ingersoll-Rand distributor or branch office.

2-28

Above are four of the FM-2 wagon drills supplied by the Gyro-Flo compressors shown at the top. Each drill is equipped with an I-R air hoist to facilitate movement of the drill carriage on the steep slopes.

Brewster also uses three self-contained, self-powered and self-propelled I-R Quarry-masters for deep-hole drilling.

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

CONTRACTORS' COMBINATION

COMPRESSORS
ROCK DRILLS
AIR TOOLS
TURBO BLOWERS
CONDENSERS
CENTRIFUGAL PUMPS
DIESEL AND GAS ENGINES

New 4-Mile Tunnel for California Power Project

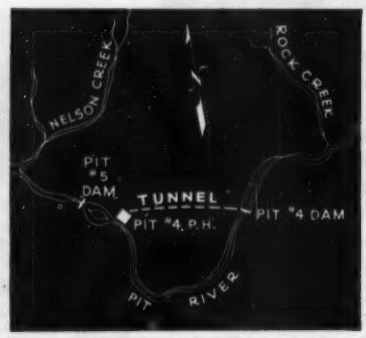
An important new construction project, now under way in the Siskiyou Mountains of north-central California, is the building of a 4-mile tunnel, part of the Pacific Gas and Electric Company's hydroelectric development on the Pit River, northeast of Redding, Calif.

The tunnel, as driven, is a modified horseshoe 23 ft wide, with nearly vertical sidewalls. When completed and concrete-lined to a finished diameter of 19 ft, it will pass 3600 cu ft per sec of Pit River water through a mountain to the company's Pit 4 powerhouse, which is being built about one mile upstream from the existing Pit 5 powerhouse diversion dam.

Clearing a path for the new tunnel requires the excavation of some 385,000 cu yd of medium-hard rock of volcanic origin. To move this lava rock, blast holes are being drilled from 5 ft to 9 ft deep. The total footage drilled is expected to be about 2,000,000 lineal feet.

Walsh Construction Company is the contractor for the project. Les Huntington, the superintendent in charge, reports that drilling is being done exclusively with rods of Bethlehem Hollow Drill Steel, fitted with carbide-insert bits. The tunnel has progressed at an average of more than 200 ft per week, from two headings.

Drill jumbo, equipped with rods of Bethlehem Hollow, at work on Pit 4 tunnel face. Carefully calculated pattern of holes is being made for next blasting charge.



Map shows route of the 21,330-ft tunnel, being built to carry Pit River water to Pacific Gas and Electric Company's Pit 4 powerhouse, now under construction.

Showing adit opened half-mile from diversion point. From here, tunnel crews are driving downstream to meet crews working upstream from powerhouse site.

★ BETHLEHEM STEEL ★

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

Two Grades of

BETHLEHEM HOLLOW DRILL STEEL

CARBON • ULTRA-ALLOY (chrome-moly)

VAPOR STEAM CLEANERS—Model Nos. 10-S and 121 vapor steam cleaners are described in two single-sheet bulletins just released by the **Aeroil Products Co., Inc., South Hackensack, N. J.**

UNWATERING PROBLEM? — If your problem is unwatering excavation, stabilizing excavation, pumping, hydraulics and engineering, you might find some of your answers in a 4-p catalog just issued by **John W. Stang Corp., 2 Broadway, New York, N. Y.**

HYDRAULIC POWER—For persons who are just beginning to cope with hydraulic problems, a folder called "Hydraulic Power—Really a Simple Thing," is just what the doctor ordered. It fills the need for a short, simple explanation of how hydraulic power works and is presented in terms the ordinary layman can understand. You can get this interesting booklet from the **Henry Mfg. Co., Inc., 1700 N. Clay St., Topeka, Kan.**

CONVEYOR BELTING — "Belting for Industry," a 4-p folder that describes rubber conveyor belting and its uses can be obtained from **Hamilton Rubber Mfg. Corp., Trenton, N. J.**

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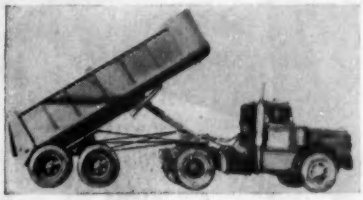
ROAD CONSTRUCTION COMPANIES

● We offer for your consideration a winch operated dump trailer that is capable of handling larger loads cheaper and faster than anything on the market today.



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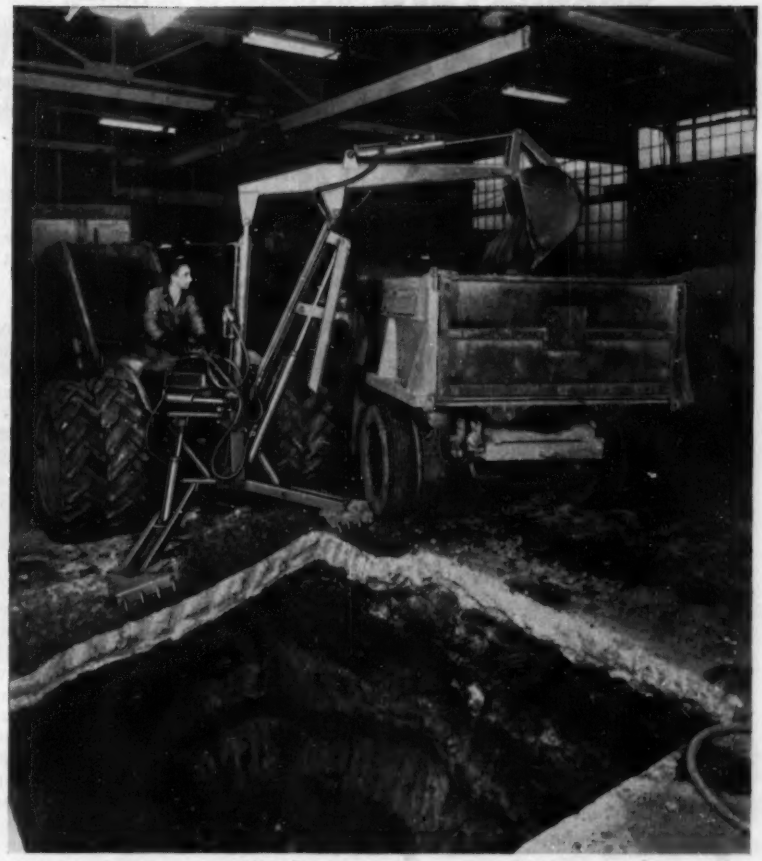
SALESMAN WANTED To sell our famous Formula No. 640 colorless masonry sealer, silicone water repellent, concrete hardener, floor mastic, admix for topping floors always cold and wet, curing compound, rubber enamel, roof coatings, gilsonite paints, floor wax containing duPont's Ludox. Thirty products. Contact building owners and managers, contractors, etc. Commission. Territory. Name this magazine. Write **HAYNES PRODUCTS CO.**, 4007 Farnam St., Omaha 3, Nebr.



Get Into Tight Spots at a Profit ...With a Sherman Power Digger!

Here's real proof of the compactness and maneuverability of the Sherman Power Digger! The job: Dig a 6 foot deep machine foundation hole 10 feet square in a working area only 20 feet square, with overhead beams and lights reducing the ceiling limit to less than 10 feet in some spots.

The floor was 8 to 10 inches of concrete, reinforced with ¼ inch steel rod. It was broken up with air tools, then loaded into a dump truck by the digger. Manual loading would have been difficult because of the reinforcing rods, but these presented no problem when loaded mechanically.

Digging and loading took less than four hours, in spite of the limited maneuvering area. Estimated time for hand labor: Three men working about 2½ days!

If you now excavate by hand, or if your heavier power equipment cannot work in tight spots, you'll profit with a Sherman Power Digger. It's compact, flexible, fast, easy to operate. It costs little to buy, less to maintain, quickly pays for itself. For the whole story, write today for Bulletin No. U-54.

Designed, Engineered and Manufactured Jointly by
SHERMAN PRODUCTS, Inc.
Royal Oak, Michigan
WAIN-ROY CORPORATION
Hubbardston, Mass.

Patent No. 2,303,852
Other patents pending

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Sherman
PRODUCTS, INC.
ROYAL OAK, MICHIGAN

...DEPENDABLE ACCURACY AT A GLANCE

KERN'S DKM1
TEN SECOND THEODOLITE

(With Optical Micrometer) is built with traditional Swiss craftsmanship incorporating the latest technical advances giving the modern engineer

ACCURACY AT A GLANCE

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AUTOCARS IN ACTION—A colorful 6-p folder for the construction industry describing the equipment available to handle construction hauling has just been released by the **Autocar Div., White Motor Co., Ardmore, Pa.**

E-Z SHORE CLAMPS—A 4-p bulletin describing the use of E-Z shore clamps for construction jobs is available by writing to the **Western Sales and Supply, 4615 Washington St., Denver, Colo.**

GENERAL CATALOG—Johns-Manville has just issued a new edition of its 40-p Industrial Catalog which describes insulations, refractory products, asbestos cement pipe, packings, gaskets, electrical products, frictional materials, roofing, siding, boring, partitions, and ceilings. Copies of this Industrial Products Catalog are available by writing to **Johns-Manville, 22 E. 40th St., New York 16, N. Y.**

THE WIRE-ROPE STORY — Five booklets devoted to giving complete information on wire rope are available. One of the books is brand new and is titled Wire Rope Use and Abuse. The other titles are, Wire Rope Data & Tables, Splicing & Fitting, Wire Rope, and Wire Rope Craftsmanship. All booklets are free. —**E. H. Edwards Co., South Francisco, Calif.**

POWDER-ACTUATED DRIVING TOOL—A new bulletin which describes the design, operation and numerous applications for the Velocity-Power Model "P" Driver, a portable powder-actuated tool for driving steel studs into steel, concrete or masonry, has just been made available. Copies of the Bulletin No. 1401-2 may be obtained on request without obligation from **Velocity-Power Tool Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.**

EIGHT NEW SEALANTS — Eight new chemical sealants developed to help provide air-tight, leak-proof assemblies under a variety of operating conditions are being introduced for industrial maintenance by Permatex. The 8 new sealants are among 18 maintenance chemical products that are now available and described in a new 1954 industrial catalog which has just been issued by the **Permatex Industrial Div., 1702-1720 Avenue Y, Brooklyn 35, N. Y.**

CATERPILLAR LITERATURE — "Been Robbed Today?" is the title of an interesting 8-p booklet that is devoted to Caterpillar diesel engines and electric sets and on-the-job applications. Ask for this booklet, Form D383, from your local Caterpillar dealer, or write direct to **Caterpillar Tractor Co., Peoria, Ill.**

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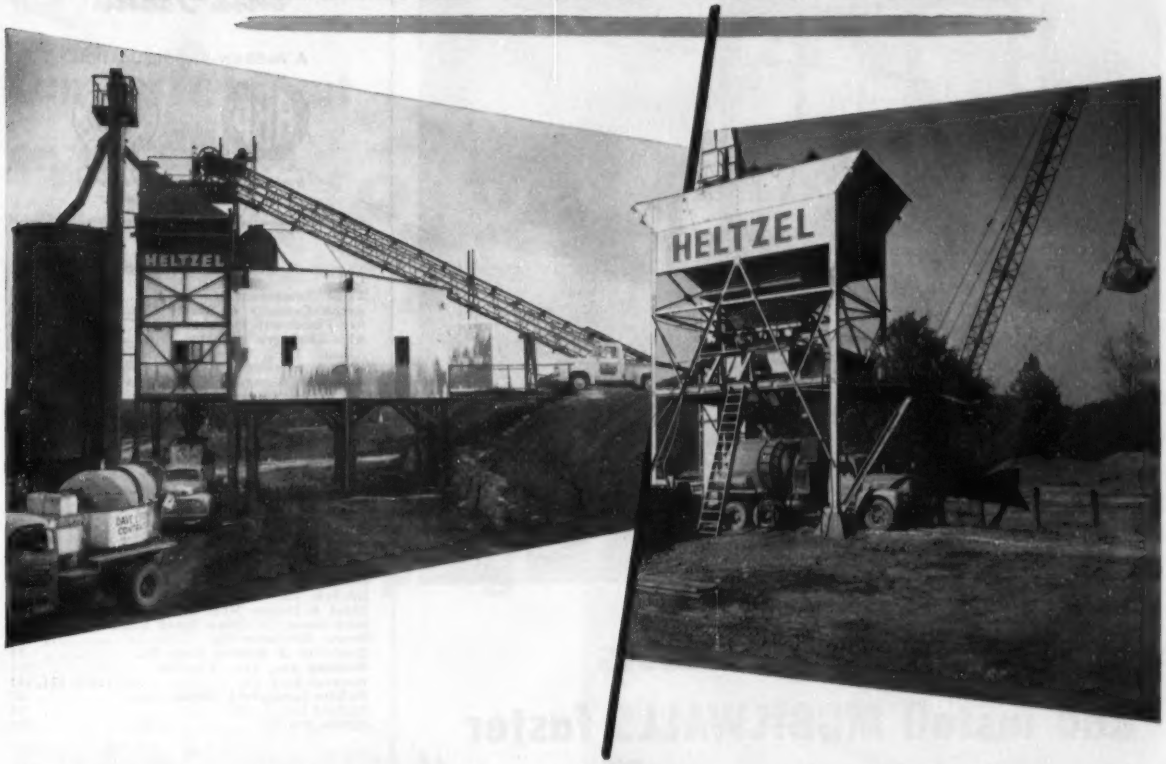

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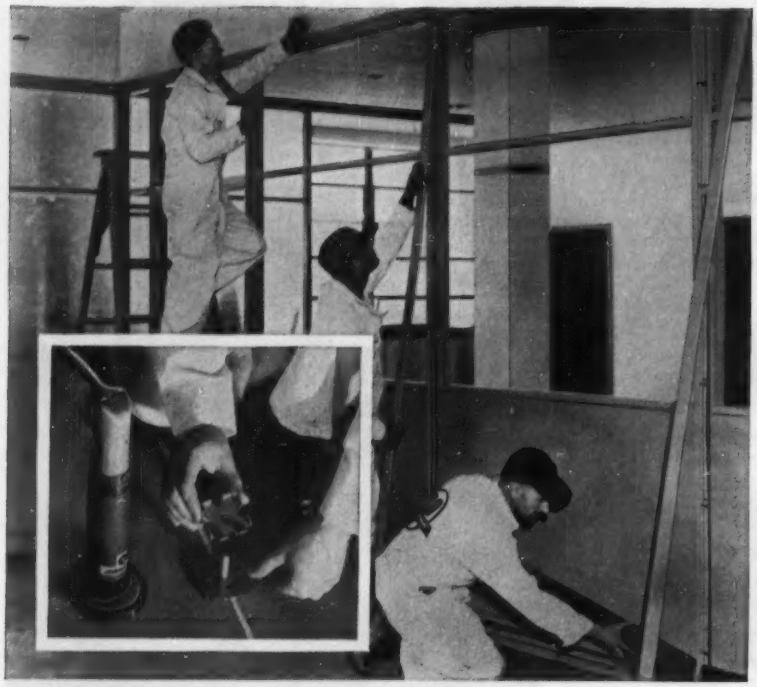

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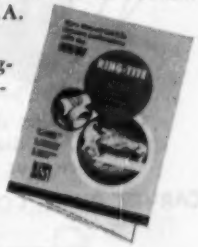

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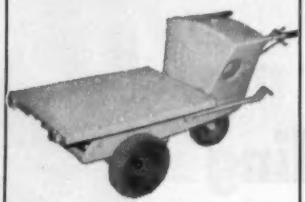

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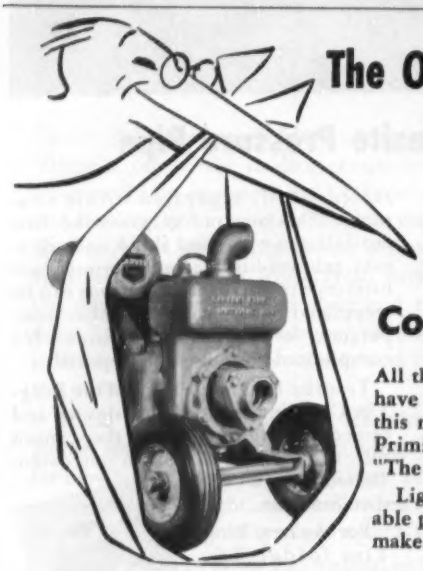

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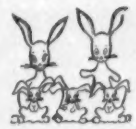

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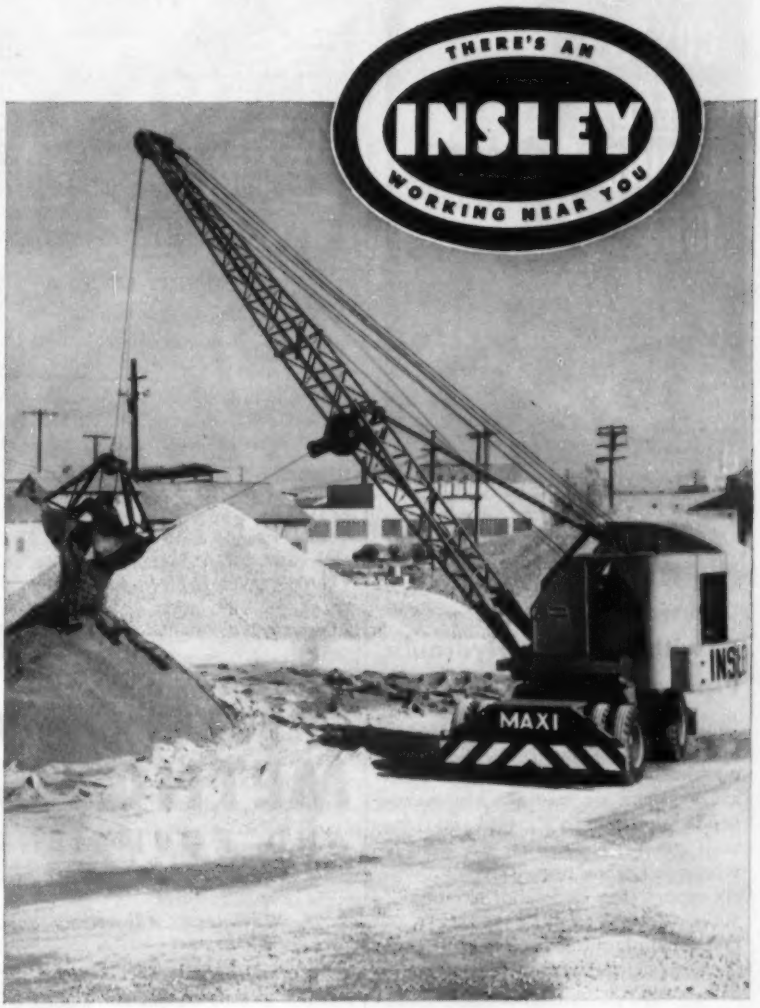

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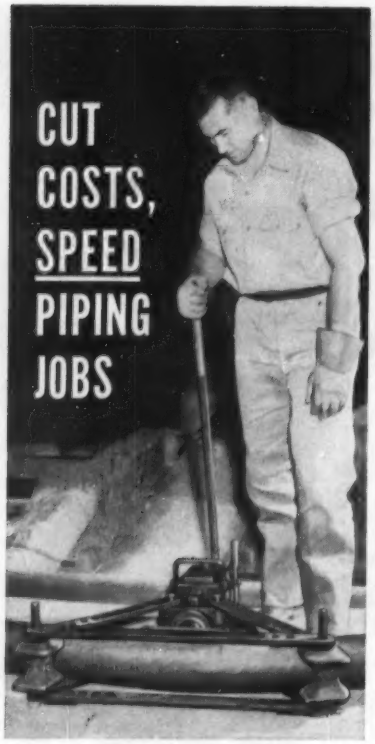

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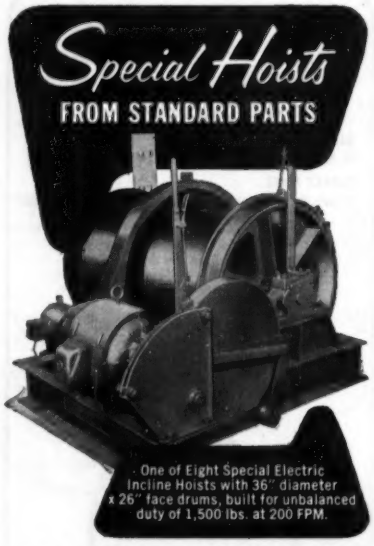

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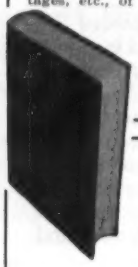

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This is the story of the key men of the miraculous 20th century—those hardy human sandhogs who dug under water and blasted through earth and rock to build the slick, modern tunnels we use today for fast motor and railroad traffic.
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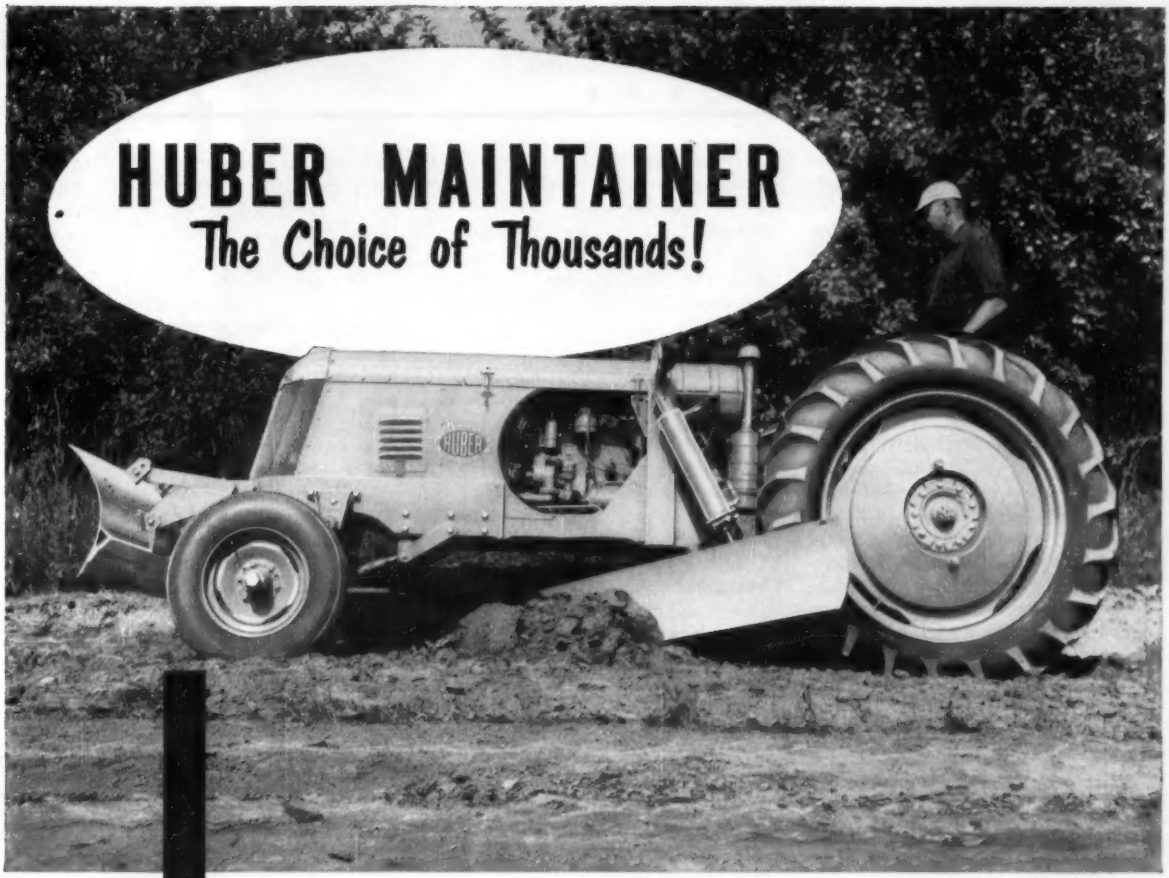

In addition to serving as a 6,000-pound grader, the Maintainer can be equipped with hydraulic attachments for bulldozer, lift-loader, road planer, berm leveler, highway mower, broom, snow plow, patch roller and side dozer service.

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HUBER

Methods Memo . . .

DIFFICULTIES IN MOVING big equipment were emphasized again recently when town officials of Suffern, N. Y., demanded that Geo. M. Brewster & Son post a $15,000 bond as a guarantee that village streets wouldn't be damaged by a big Brewster crane being moved from a railroad siding out to a near-by job on the New York State Thruway.

JOB-PLACEMENT physical examinations again proved to be about the hottest and most controversial subject in construction safety at a panel discussion held by the Construction Section of the Massachusetts Safety Council in Boston recently. The panel was made up of representatives of labor, industrial medicine, compensation insurance, the state Industrial Commissioner, and contracting. Ye Ed acted as moderator, repeating the role assumed at the National Safety Congress in Chicago last fall.

Two big points were raised by the discussion, with participation from the audience: (1) The only way to establish fair and proper standards for such examinations is through a cooperative determination by all interests concerned; and (2) These examinations will be tolerated by labor (and by conscientious contractors) only if they are conducted on an honest basis for the purpose of placing workers according to their physical abilities—and not with the idea of using the tests for barring certain individual workers from employment.

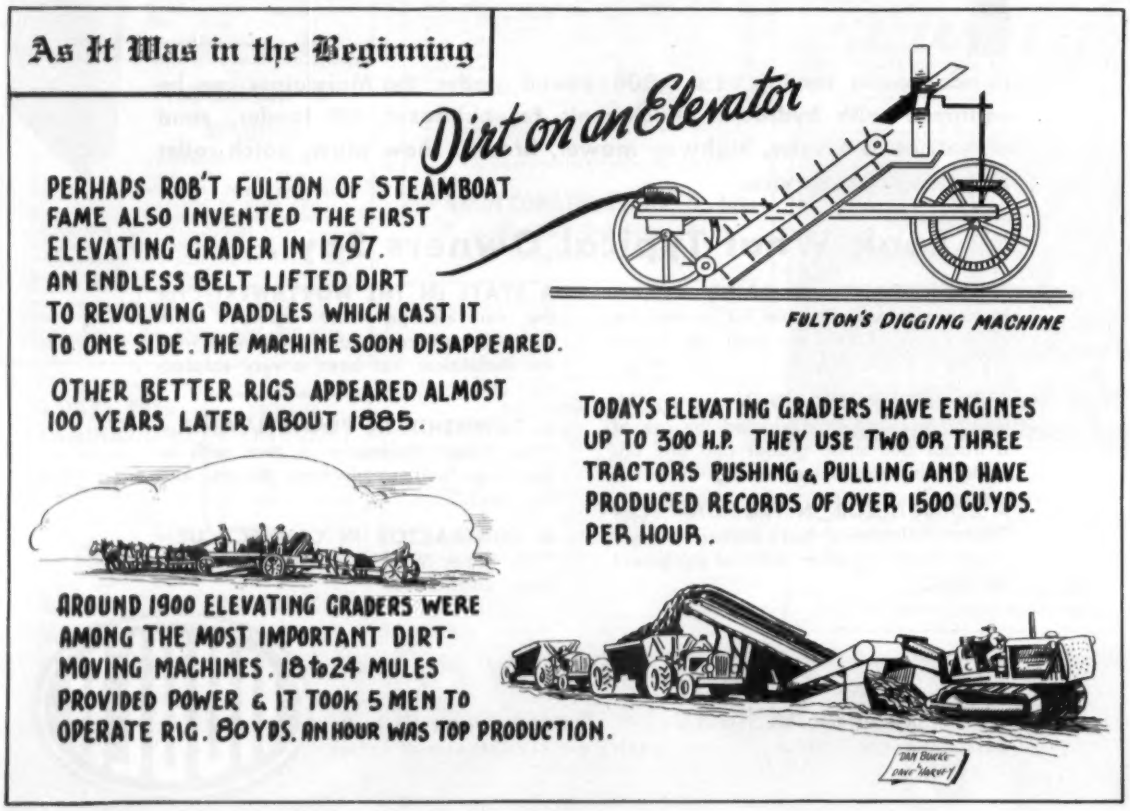
FOR CLOSE BIDDING, how's this? The Port of New York Authority asked for bids on United Air Lines hangar No. 8, Idlewild International Airport, and received: a proposal of $3,959,223 from Lasker-Goldman Corp., New York, who missed the job by $123 when S. Silberblatt, Inc., came up with a bid of $3,959,100. Rumor has it that Lasker-Goldman always ends its bids with three numbers adding up to seven—believing that's a lucky deal. Maybe they'll have to pick another lucky number now.

TEN THOUSAND STICKS of dynamite in one pile can become a ferocious lethal lump when mis-applied. We all have been sobered by recent revelations on nuclear fission (and read again Rich's editorial, "The Gates of Hell Stand Ajar", page 53). An editor of McGraw-Hill's Nucleonics Magazine did some estimating the other day, comparing H-bomb forces—now measured in terms of megatons of TNT—with more common forces.

He jarred us into reality by the results of his calculations: He found that if the largest H-bomb now believed feasible were directed against the many million residents of New York City, its total destructive force would be equivalent to exploding 10,000 sticks of dynamite for every man, woman and child in the big city!

RUSSIAN COPIES of equipment must be legion. The following note was received from our good friend, George C. McNutt, who is in the advertising business in Oakland, Calif.:

"The Russian multiple side-bucket excavator shown on page 155 of your March issue is a copy of the Bucyrus-Ruth Excavator developed in the West for cleaning irrigation ditches. I believe the Ruth originally was manufactured in Stockton, Calif. About 1939, Bucyrus-Erie bought the machine and I prepared a rather comprehensive catalog on it for them."


As It Was in the Beginning
Dirt on an Elevator
PERHAPS ROB'T FULTON OF STEAMBOAT FAME ALSO INVENTED THE FIRST ELEVATING GRADER IN 1797. AN ENDLESS BELT LIFTED DIRT TO REVOLVING PADDLES WHICH CAST IT TO ONE SIDE. THE MACHINE SOON DISAPPEARED.
FULTON'S DIGGING MACHINE
OTHER BETTER RIGS APPEARED ALMOST 100 YEARS LATER ABOUT 1885.
TODAYS ELEVATING GRADERS HAVE ENGINES UP TO 300 H.P. THEY USE TWO OR THREE TRACTORS PUSHING & PULLING AND HAVE PRODUCED RECORDS OF OVER 1500 CU.YDS. PER HOUR.
AROUND 1900 ELEVATING GRADERS WERE AMONG THE MOST IMPORTANT DIRT-MOVING MACHINES. 18 to 24 MULES PROVIDED POWER & IT TOOK 5 MEN TO OPERATE RIG. 80 YDS. AN HOUR WAS TOP PRODUCTION.

built in **1941**

concrete in excellent condition

↑ Kansas City Water Softening Plant, Kansas City, Mo. Engrs.—Burns & McDonnell Engr. Co. and Black & Veatch Engr. Co., Contr.—S. Patti Constr. Co.—all of Kansas City, Mo.

↓ $900,000 Addition. Engrs.—Burns & McDonnell Engr. Co.; Contr.—Interstate Constr. Co., both of Kansas City, Mo.; Ready-Mixed Concrete Supplied by Concrete Materials Co., Kansas City, Kan.

addition in **1954**

*same sound practice followed**

*concrete designed for quality...economy with minimum unit water content

When the Kansas City Water Softening Plant was built in 1941, every means was employed to obtain the highest quality concrete most economically. Today's excellent condition of this 13-year old plant testifies to the success of the builders' efforts.

Pozzolith was one of the means used to get these results. Through dispersion of cement it was an aid in producing *lowest unit water content*. The soundness of this practice is shown in the following, from U. S. Bureau of Reclamation Concrete Manual:

"For a given set of materials and water-cement ratio, the unit water content (water required per cubic yard of concrete) is the most important basic factor affecting the quality of concrete". (Page 130, 5th Edition.)

Information showing how Pozzolith will help obtain the qualities you want in concrete sent on request.

POZZOLITH...

the cement-dispersing, water-reducing agent developed by The Master Builders Co. in 1932, makes available the optimum amount of air in concrete and fully complies with the water-cement ratio law. Added at the mixer.

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Subsidiary of American-Marietta Company

Carries 18.0 cubic yards of earth cross-country at 35 mph with wheels on TIMKEN® bearings

THIS Wooldridge Manufacturing Company's Terra Cobra really has to take it to keep moving over rough ground with an 18.0 cubic yard load at speeds up to 35 mph. And Timken® tapered roller bearings in drive and scraper wheels help this Terra Cobra take rough ground in stride without breakdowns.

The tapered construction of Timken bearings enables them to take any combination of radial and thrust loads resulting from big loads and rough, uneven ground.

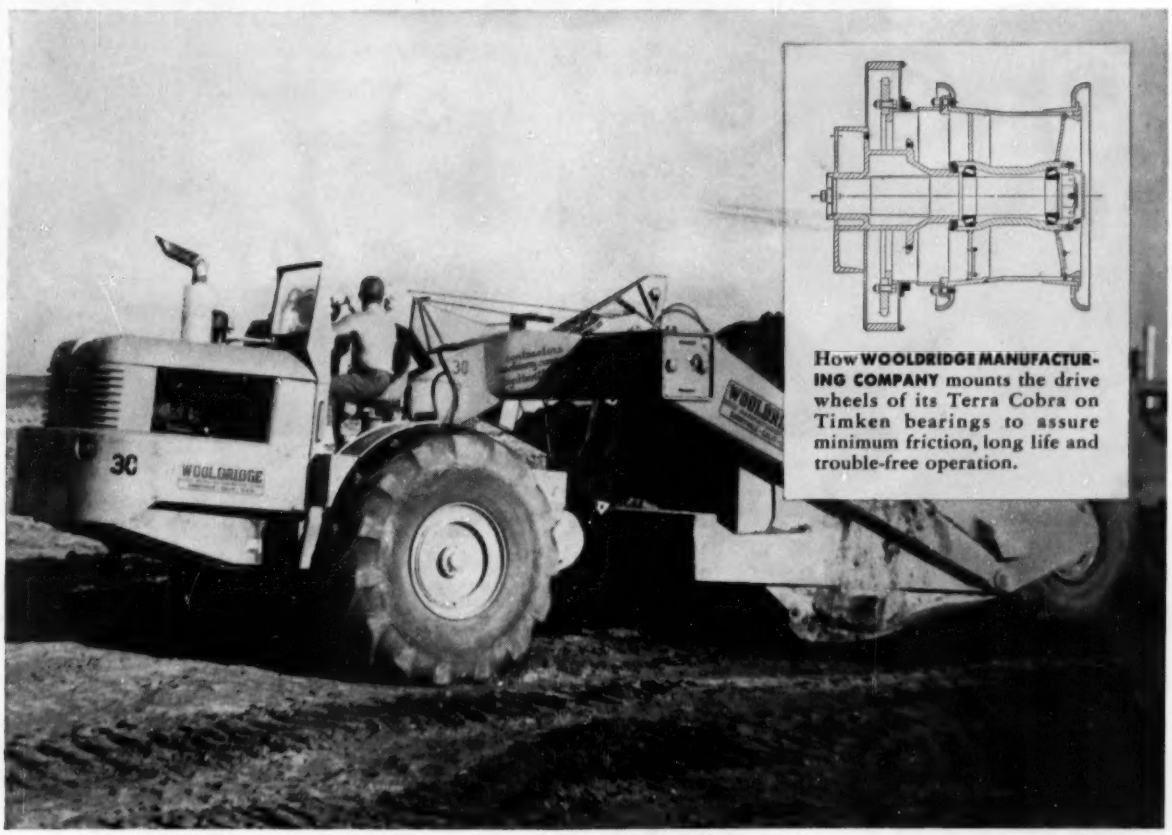
And Timken bearings provide extra load-carrying capacity because of line contact between their rollers and races.

Made of Timken fine alloy steel, the bearings are case hardened to give them a hard, wear-resistant surface over a tough, shock-resistant core.

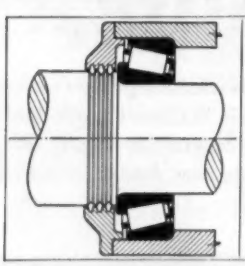
Bearing closures are more effective because Timken bearings hold housings and shafts concentric. Dust and mud can't get in—lubricant can't get out. As a result, maintenance is minimized, cost reduced.

Timken bearings can give *you* these same advantages. Always specify them in the equipment you build or buy. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How **WOOLDRIDGE MANUFACTURING COMPANY** mounts the drive wheels of its Terra Cobra on Timken bearings to assure minimum friction, long life and trouble-free operation.



LUBRICANT STAYS IN —DIRT KEPT OUT

Because Timken bearings hold shafts concentric with housings, closures are made more effective. Lubricant is retained, dirt and moisture kept out.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis Timken steels.

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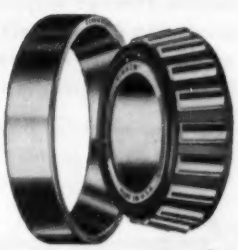

NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⬭ AND THRUST ⬭ LOADS OR ANY COMBINATION